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THE OPHTHALMIC RECORD

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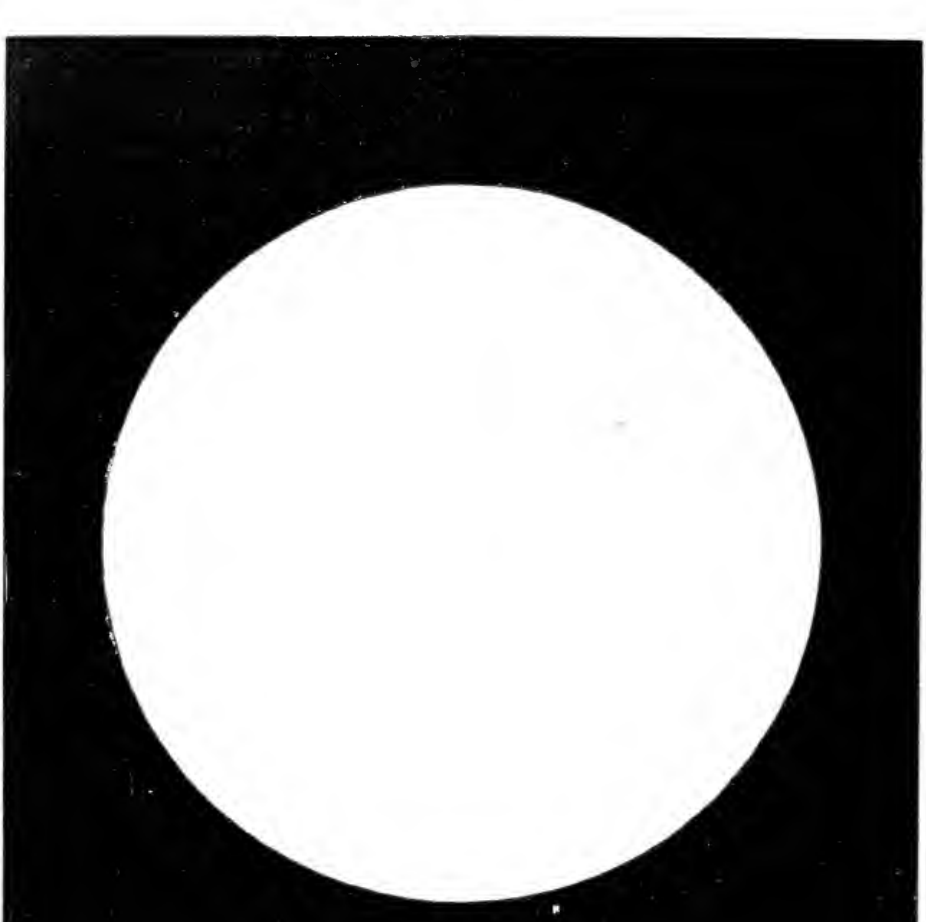

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OPHTHALMIC RECORD

VOL. VI. CHICAGO, JANUARY 1897 No 1. NEW SERIES.

ORIGINAL ARTICLES.

AN OBSCURE CASE OF MONOLATERAL NEURO-RETINITIS.

BY CHAS H. BEARD, M. D

Of Chicago.

Surgeon to the Illinois Charitable Eye and Ear Infirmary.

(With Colored Frontispiece.)

Mrs. Z., a very bright, highly respectable lady of sixty-four years, consulted me on October 31, 1896, relative to poor sight, more pronounced in the right eye. She fancied that, in order to regain perfect vision, it was only necessary, in her case, to be fitted with proper glasses She averred that she came of an exceptionally healthy family, was the mother of several robust children, and that her own physical condition had always been most excellent.

The only noticeable abnormality on superficial inspection of the face and eyes was a marked laxity of all the muscles of the right side of the face, even to such an extent that the left eye winked while the right orbicularis of the lids remained quiescent. The right eye could be closed, however, without undue effort, the integument over the right half of the frontalis could be corrugated, and the right facial muscles responded to the galvanic current as promptly as did the left. This seeming paralysis of the right seventh nerve the patient declared to be of life-long duration, and a niece, who accompanied her, affirmed that her aunt had always had "a crooked face" Mrs. Z. had no recollection of ever having had an affection of either ear, though the otoscope showed a round cicatrix in the right *membrana tympani*, just posterior to the tip of the malleus handle, evidently of long standing. She heard the acumeter at only one inch with the right ear, and at one foot with the left Bone conduction was almost wanting on both sides.

The greater reduced vision of the right eye had been first noticed more than a year previously, Aside from the amblyopia there had been no eye trouble. The pupils were of ordinary and equal size, and natural in their reactions. There

was no displacement of the globes, nor any restriction of the ocular movements.

R. V. $= \frac{1}{200}$; not improved by glasses

L. V. $= \frac{20}{200}$; $\frac{20}{20}$ — w. $+1.75$ s $\supset +0.5$ c ax. $180°$. With $+5$ D. over left reads J. 1 at 9″

The ophthalmoscope, while evincing clear media in both eyes, disclosed severe neuro-retinitis, with innumerable hemorrhages, in the right, and a perfectly normal fundus in the left. As the right presented a rather striking picture, and, besides, as the case was in some respects unique, I made a painting of it. (See frontispiece.)

There had never been pain in the eyes; never headache, nor dizziness, nor vomiting. There had never been diplopia; and tests with prism and red glass showed exact equilibrium of the ocular muscles. The fields for white of both eyes were of average breadth for one of that age (64). Central vision in the right was interfered with by the macular hemorrhages. (See drawing.) Fields for color, of the left eye, were normal.

In the early summer of the present year the patient became suddenly afflicted with alexia—could not read a word, although she could plainly discern the letters. This defect she attributed to inability to see aright, and, in consequence, consulted an oculist practicing in her native state. It is more than likely that the neuro-retinitis was at that time diagnosed, as the doctor prescribed K. I., and no glasses. The alexia only lasted a week or ten days.

There had been at no time any symptom pointing to disease of the kidneys. Thorough examinations of the urine were made, one by Dr. Williams, Interne at the Eye and Ear Infirmary, on November 1st, and one by Dr Ed. Brougham, pathologist to the Passavant Hospital, on November 13th, proving it, on both occasions, to be absolutely normal, if one might except the fact that at the last examination plentiful crystals of the oxalate of lime were found

Mrs. Z. was advised to consult a neurologist, and I suggested Dr. Hugh T. Patrick, who made a very careful examination, with entirely negative results. As there was hypertrophy of the heart, and as palpation of the external carotids indicated arterio-sclerosis; furthermore, as all other signs pointing to a cause were lacking, we are inclined to attribute the right neuro-retinitis in this case to a phase of degeneration of the blood-vascular system, similar to those described by Otto, Raehlmann and others.

*CLINICAL NOTES OF A CASE OF INJURY PRODUCING AS THE MOST PROMINENT SYMPTOM LUXATION OF THE EYEBALL INTO THE ORBIT: (SO-CALLED TRAUMATIC ENOPHTHALMOS).

BY CHARLES A. OLIVER, A. M., M. D.

One of the Attending Surgeons to Wills' Eye Hospital; one of the Ophthalmic Surgeons to the Philadelphia Hospital, etc.

Without endeavoring to solve any problem as to etiology or as to condition, and without presuming to venture any new hypothesis, or wishing to correlate the present example of this character of disturbance with some preexisting theory; and, in fact, with no other motive than to place a fairly well studied instance of most probably the sympathetic type of disorder (one presenting a new and a curious symptom) upon record, in the hopes that its recital may add some additional symptomatology to the previous more or less imperfect studies of the incomplete variety of the disease—the writer offers the following, at least to him, interesting case:

On the 14th of July, 1892, I saw a 47 year old weaver at my clinic at Wills' Eye Hospital for the first and only time. The patient stated that five weeks previously he had been struck in the left eye with a shuttle. The eyeball and the surrounding tissues had been much inflamed for the first three weeks, during which time he had been under professional advice.

He came complaining of defective sight in the injured eye. Uncorrected vision with the right eye equalled one-half of normal, this being accounted for by a manifest hypermetropia. Uncorrected vision in the left eye was much lower, it equalling one-seventh of normal with the same amount of manifest hypermetropia. Accommodative play in each eye was normal for the age of the patient and the refractive condition.

Upon monocular exposure, the right pupil, which was round, measured two and one-half millimeters in its horizontal meridian, whilst that of the left eye under the same condition, had a diameter of four millimeters in the same meridian. Both irides, which were of good tint, were quite prompt to light-stimulus, accommodation, and efforts for convergence, the iris of the injured eye being possibly a trifle sluggish. There was a marked recession of the left globe into the orbit, the anterior plane of the cornea being at least four to five millimeters behind that of its fellow. The lids were slightly depressed and the palpebral fissure was about three millimeters shorter than that of the right lids; the opening being still further shortened and narrowed when the patient was made to gaze straight ahead with the right eye.

There was almost complete paralysis of the left superior rectus muscle, the superior limbus of the left cornea being two and a half millimeters lower than that of the opposite eye. Further study of the false and the true projection images showed a slight paresis of the left inferior oblique muscle. During these examinations it was several times noticed that when attempts were made with the two

*Paper read before the May, 1896, Meeting of the Section on Ophthalmology of the College of Physicians of Philadelphia.

eyes to fix upon a near-object upon the median line, a spasmodic twitching of both alae of the nose, which was more marked on the left side, appeared. At other times, the clonic spasm of the nasal alae was found to be synchronous with a series of rapid movements of the orbicularis palpebrarum, but when the orbicularis was made to act forcibly, the clonic spasm of the angles of the nose stopped, and the nostrils were drawn spastically together. As far as could be palpated, there did not seem to be any fracture in the external portions of the skull in the region of the eye.

To ascertain if there were any nasal disturbances the case was sent to my friend, Dr. Walter J. Freeman, who, upon the following day made a careful examination. His report, under date of the 14th July, 1892, read as follows:

"DEAR DR OLIVER. J. S., whom you very kindly referred, brought me your note to day. The nose shows old injury dating back probably many years of fracture of triangular cartilage of the septum. The antrum on the left side is perfectly free, as shown by transmitted electric light, and there is no collection of pus, nor trace of recent injury anywhere. The inferior turbinated body is hypertrophied on the left side sufficiently so to warrant me to inquire as to lachtymation, but of that I could get no definite reply. There is general congestion of nose and throat."

METAMORPHOPSIA.

By E. C. ELLETT, M. D.,
Of Memphis, Tenn.

Case I. Mrs. McG., Aet. 25—O. D. $\frac{20}{50}$ p., O. S. $\frac{20}{50}$ p.
Under Mydriatic, O D.—S. 0 25. ⊃ — cy. 1.25, ax. 110° = $\frac{20}{20}$.
O. S.—S. 0 50, ⊃ — cy. 1.00, ax 80° = $\frac{20}{20}$.

Ordered full correction. Marked obliquity of vision, disappearing in a few days. Glasses comfortable and relieved asthenopia Has used them three years.

Case II. Miss C., Aet. 27. O. D. $\frac{20}{200}$; O. S. $\frac{20}{200}$.
Under Mydriatic, O. D. + cy. 5.00, ax. 165° ⊃ — S. 1 50 = $\frac{20}{40}$ p.
O. S +cy. 5 00, ax 30° ⊃ — S. 1.00 = $\frac{20}{40}$ p.

Ordered full correction. Noticed that a shelf, e. g , mantelpiece, seemed to incline towards her. This was constant for a while, but now (after one year) is seen very rarely. Her vision rose to $\frac{20}{30}$, mostly in three months, and her eyes are comfortable.

Case III. Mrs S., Aet. 23. O. D. $\frac{20}{126}$, O. S. $\frac{20}{80}$.
Under Mydriatic. O. D. + cy. 5.00, ax. 120° ⊃ —S. 1.00=$\frac{20}{30}$.
O. S. + cy. 3.50, ax. 90° =$\frac{20}{30}$.

Ordered O. D. + cy. 3.50, ax. 120° ⊃ — S. 1 00; O. S. + cy 1.25, ax. 90°, these giving best and most comfortable post-mydriatic vision. Rectangle narrow at top for two or three weeks Vision is now $\frac{20}{40}$ mostly (after a year) and comfortable.

Case IV. Mrs. S., Aet. 27. O. D. $\frac{20}{30}$ p, O. S. $\frac{20}{70}$.
Under Mydriatic, O D. + S. 1 00 ⊃ — cy. 1.00 ax, 180° = $\frac{20}{20}$.
O. S. + S. 1 50 ⊃ — cy. 3 00, ax. 155° = $\frac{20}{20}$ p.

Ordered O. D. — cy. 100, ax. 180°, O. S. — cy. 3.00, ax. 155°. Marked obliquity of vision passing off after ten days. Glasses relieved frontal headache, blepharitis marginalis and asthenopia, and have been worn constantly for one year. He wrote nine months later: "In answer to your inquiry regarding the oblique sight of my eyes when first using the glasses, will say that it passed away in about eight or ten days after. * * * My eyes are now better than they have been for years"

Case V Miss H., Aet. 24. O. D. $\frac{20}{70}$, O S. $\frac{20}{70}$.
Under Mydriatic, O. D. + cy. 3.50, ax. 120° = $\frac{20}{30}$.
O S + cy. 3.50, ax. 60° = $\frac{20}{30}$.

Ordered + 3.00 cy. ax. as above in each eye, obliquity of vision for a few days. Asthenopia relieved.

Case VI. Miss S., Aet. 18. O D. $\frac{10}{200}$, O. S. $\frac{8}{200}$.
Under Mydriatic, O. D — S. 2.25 ⊃ — cy. 1.25, ax. 135° = $\frac{20}{30}$.
O S. — S. 2.50 ⊃ — cy. 1.25, ax. 15° = $\frac{20}{30}$.

Ordered full correction. Obliquity of vision, causing a rectangle to look narrower at the top and at the left end when seen with both eyes. With either eye separately it looked as it should. This disappeared in a few days.

Case VII. Miss G., Aet. 25. O. D. $\frac{20}{100}$, O. S. $\frac{20}{20}$ m
Under Mydriatic, O D. — cy. 0.25. ax. 165° ⊃ — cy. 2.50. ax. 75° = $\frac{20}{30}$.
O S. — cy. 0.50, ax 90° = $\frac{20}{20}$

Ordered O. D. — cy. 2.50, ax. 75°, O. S. + cy. 0.50, ax. 90°. A rectangular card looked narrower at the right end by reason of a sloping down and to the right of its upper border. This lasted a few days.

SOME UNUSUAL CONGENITAL ANOMALIES OF THE EYE.

By SWAN M. BURNETT, M. D., PH. D.,

WASHINGTON, D. C.

Professor of Ophthalmology and Otology University of Georgetown. Director of the Eye and Ear Clinic at the Central Dispensary and Emergency Hospital. Ophthalmic Surgeon to the Children's and the Providence Hospitals.

ILLUSTRATED.

Case I. Peculiar Foldings of the Conjunctiva in Both Eyes.—

LOTTIE W.—A colored girl of 9 years was brought to my clinic in April, 1896, for a concomitant convergent strabismus of the left eye. Aside from the strabismus which is very uncommon in this race, the most noticeable feature was the appearance of the conjunctiva of the globe towards the inner canthus of both eyes.

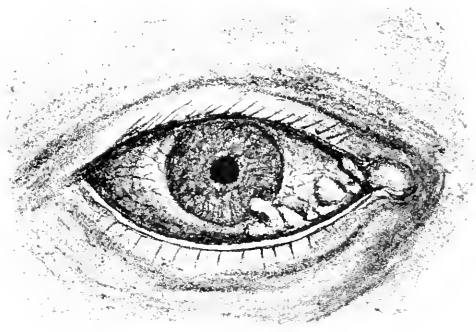


Fig. I.

There was a spot of attachment to the cornea at the lower inner quadrant about 6 mm inside of the clear margin and raised 2 mm above the corneal level but evidently imbedded in it. Around this the cornea was perfectly clear. From this spot the folds extended down and towards the caruncle, which was more or less lost in them, and one fold extended upwards from the superior edge of the caruncle under the upper lid. These foldings did not seem to be simply enlargements or thickenings of the mucous membrane but genuine duplications whose form changed with the movements of the eyeball which put the conjunctiva on the stretch.

Figure 1 gives an idea of the peculiar foldings of this membrane.

The foldings and their place of departure on the cornea were practically identical in size and shape in the two eyes. There was no anomaly in any other part of the anatomy of the eyes or the surrounding orbit. The mother stated that the condition had existed since birth and that the eyes had never been inflamed.

The congenital nature of the condition seems placed beyond a doubt and the only question is as to whether it is the result of an intra uterine ulcer of the cornea in which a fold of the conjunctiva became entangled and remained adherent, or whether it is an anomaly in development. The latter seems to me the more probable, 1st, on account of the almost perfect symmetry of the malformation which would hardly be possible in a pathological process, 2nd, because of

the duplication extending from the caruncle under the upper lid. It appears that the development of the lids and conjunctiva, both from the ectoderm, occur close to or concomitantly with the closure of the lachrymo-nasal groove (*Ryder, Norris & Oliver System of Diseases of the Eye*), and some hitch in the regular process of development might easily lead to such duplication. The adhesion to the cornea, however, is not so easily accounted for.

Case II. Congenital Opacity of the Cornea.—

LATMA—Colored child, 5 years old, was seen at the Children's Hospital October 17th, 1894. She was a healthy, though rather a delicate looking mulatto, and according to the statement of her mother, the condition of her eyes had been essentially the same since birth There had never been any inflammation, redness or discharge. There was a generally diffuse opacity of both corneae which at the periphery gradually merged itself unto the sclerotic. Through the centre there was a space almost circular in shape through which the iris and pupil could be faintly seen; this was bounded by a ring of dense opacity of an almost uniform width of 3 m m. Outside of this the corneal tissue was again semi-transparent showing the color of the iris faintly, still outside of this the opacity of the cornea merged into the sclera.

The cornea, as a whole, appeared oblong horizontally and measured up to the ill-formed scleral edge 10 m m in the horizontal, and 8 m m in the vertical direction. As a whole it seemed flatter than the normal and the anterior chamber appeared shallow.

Fig. II shows the condition fairly well.

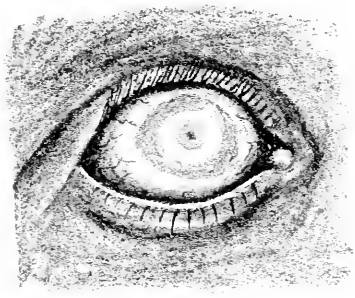


Fig. II.

Both corneae were in essentially the same condition as to the particular features. Both were horizontally long, with an obtuse angle to the temporal side and the width of the opaque ring and the clearer spaces in both were practically the same. The symmetry of the condition was quite as perfect as we can see in congenital anomalies.

The amount of vision possessed by the child could not be accurately determined. She seemed to have a visual power quite beyond what would be expected from the condition of the eyes. She had no difficulty in going about the ward and played with the other children in the liveliest way and made few of the mistakes of a blind person. While no jerky nystagmus was presented the eyes

were very unsteady. There were no evidence of inherited syphilis. The history of her parents could not be had.

Cases of congenital opacities of the cornea, while not very rare, are yet sufficiently uncommon to justify the recording of every newly observed case. Opinions differ as to whether they are due to intrauterine inflammation or to defective or arrested development. The question is discussed in the *Graefe-Saemisch Handbuch* and in *Vol. I of Norris and Oliver System* and it is needless to go into a detailed consideration of it here.

Without doubt it may be due to either. The case recorded above, it seems to me, belongs to the defective development class. Asymmetry so nearly perfect as exists here could hardly follow an inflammatory trouble. The condition must be the result of a process which acted equally on both sides, and this we could only have in the law of development of the tissues.

Case III. Floating Filamentous Band in the Vitreous.—

R. A. C.—A boy of 5 years was seen first on May 8th, 1895. He came on account of a tendency of the left eye to turn in, having been noticed by his mother since early infancy. The right eye was found to be normal in all particulars. The left is practically blind, there being only perception of shadows, and there is no attempt at fixation. There has been no injury or inflammation of that eye. The pupil is normal and responds to light and the lens is clear throughout. On looking directly into the pupil with the ophthalmoscope a floating film is seen originating by a broad base apparently from below the lens and to the outer side. From thence it runs backwards condensing into a band, which divides into two parts which continue on their way towards the posterior of the eye. Fig. III.

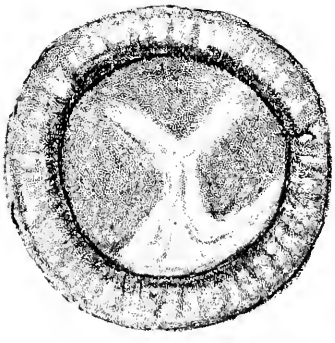


Fig. III.

In looking at the fundus with the ophthalmoscope two fine filamentous bands are seen starting from near the centre of the disc, and running downward, meet the bands coming from the anterior part of the eye. A definite attachment to the disc cannot be made out.

As the fundus picture shows Fig. IV, the vascularization of the disc and retina do not depart from the normal; nor were there any changes in the rest of the

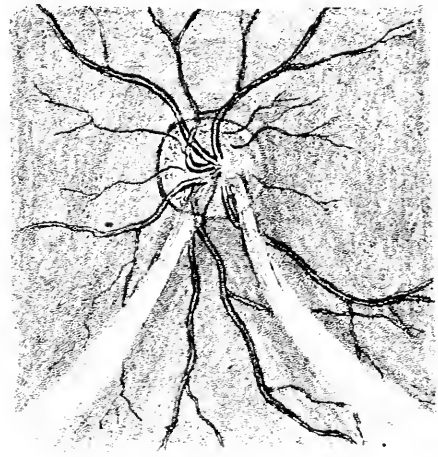


Fig. IV

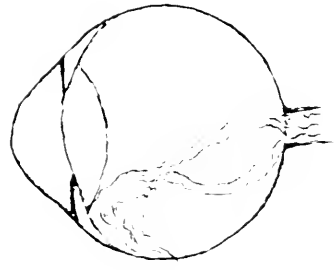


Fig. V.

fundus which could be considered abnormal. A profile view of the supposed arrangement is shown in Fig. V.

The marked amblyopia present could not have been due directly or solely to the interference of the floating membrane with the formation of a clear image. This was a factor undoubtedly at the beginning, but the diminished visual acuteness would seem to be rather the result of a defective development of that sense dating back to birth, and resting possibly, partly on an original defective sense perception, aided by the obstruction to a clear retinal image presented by the membrane.

Whether the membrane is pathological or simply an abnormal development can hardly be determined now, but that it is congenital I regard as quite certain.

The only reference I have been able to find regarding congenital films in the vitreous is contained in Treacher Collins' recent monograph "*Researches into the Anatomy and Pathology of the Eye*," London, 1896. On page 43-44, he says: "The congenital defect is I believe due to some irregular development of the mesoblast tissue, which normally passes in at the ocular cleft to form the vitreous humor.

"Hess, who has met with fibrous tissue of a similar character in different parts of the vitreous in microphthalmic eyes, states, he cannot regard it as an inflammatory product, but considers it to be the result of an atypical embryonic development of the intruded mesodermic layer which goes to form the vitreous."

A CASE OF GLAUCOMA FOLLOWING THE USE OF ATROPIA.

By Dr. EDWARD J. BROWN,
Of Minneapolis, Minn

C., aged 61 years, a retired clergyman consulted me June 23, 1894, seeking relief from asthenopic and nervous symptoms. Said he had consulted the most eminent oculists in the country who had prescribed glasses, none of which had been of the slightest assistance. He had been retired since 1882, wholly unable to work, and able to use his eyes for but a few moments at a time and then at the cost of much suffering.

At the age of seven years he fell against a desk striking the left side of his face and receiving an injury which resulted in marked failure of development of the entire left side of the face. At the age of twenty-four years, while in college, his eyes became weak, and have been a source of trouble ever since. At the age of thirty-four years he had a nervous break-down and pulmonary hemorrhages. Has always been neurasthenic and dyspeptic.

I found the following condition. Eyes very sensitive to light, but they appeared to be normal, as the ophthalmoscope revealed only myopic astigmatism, a deep physiological cup in right and a slight one in left eye.

V. O. D. $\frac{20}{200}$; with — 2. ⊂ — .50 cyl. ax. hor. = $\frac{20}{20}$.

V. O. S. $\frac{20}{50}$; with — 2. cyl. ax. 60° nasal = $\frac{20}{20}$.

Right hyperphoria, 1°. Esophoria 5°. At 13″ Exophoria, 6°.

Considering the case a proper one for the use of atropia, he was given a drop of a four grain solution in each eye, requested to repeat the drops in the evening and morning, and to return the following day. Not feeling well he did not return till the 26th, three days later. Just how many drops of atropia were used I am unable to say. I found nothing new at this visit except a change in axis of the right cylinder from horizontal to 60 temporal.

June 30th Mr. C. came to me saying he had noticed colored haloes around lights for three or four days, possibly since the 25th. Vision was unaffected; tension doubtful. He was given drops of a ½% solution of eserine sulphate, which caused pain. Both fields were slightly contracted, especially the upper and lower quadrants, the L. more than the R. He did not report again until the 4th of July, when I found the pupils still moderately dilated, L. cornea less sensitive than the right, arterial pulsation not venous on pressure, and slightly increased tension L.

July 5th. No haloes and no eserine since the 5th. Pupils three mm. wide, and react normally. Tension, both eyes, normal. Fields practically unchanged since June 30th.

He was given a week solution of eserine which was used for some weeks and then discontinued. Glasses for distance and reading were given which have afforded a degree of comfort he had not enjoyed for years, and he has not had sufficient trouble with his eyes since to submit to the discomfort of an operation.

IMAGE-CHANGE CAUSED BY ASTIGMATISM AND BY CORRECTING CYLINDERS.

By G. C. SAVAGE, M. D.
Of Nashville, Tennessee.
Professor of Ophthalmology in Med. Dept. Vanderbilt University.

ILLUSTRATED.

The accompanying illustrations are so simple, easily understood and at the same time correct, that no apology for this paper seems necessary. These, at a glance, make clear what I have long taught as to the obliquity of retinal images in oblique astigmatism, the correctness of which, though at first denied by my critics, is now doubted by no one who has at all studied what has already appeared. A great deal of hard work, and the slight annoyance one always feels when criticised, although knowing the critics to be in error, might all have been avoided if these simple illustrations had occurred to me at the beginning.

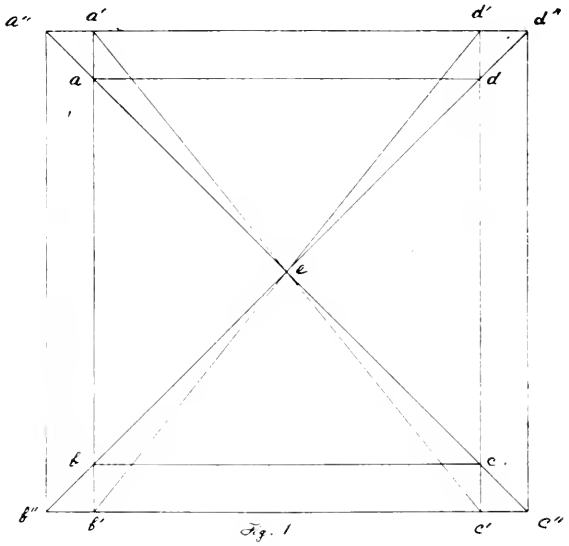


Fig. 1

Fig. 1 is complex, showing a square as seen by a non-astigmatic eye, as seen by an eye astigmatic according to the rule, and as seen by the latter after the astigmatism has been corrected by a plus cylinder. The rectangle *a-b-c-d* is the square seen by the non-astigmatic eye, and *a-c* and *d-b* show the diagonals of this square. The rectangle *a'-b'-c'-d'* is the figure seen by the astigmatic eye with the meridian of greatest curvature vertical. The axial rays from the ends of the lines *a-b* and *d-c* enter the eye through parts of the cornea parallel with the meridian of greatest curvature and so near to it that their

refractive power is practically the same. The refraction of these axial rays from *a* and *b*, by the cornea, is such as to make them cross each other, on their way back to the retina, sooner than they would have done if their had been no astigmatism, hence their points of impingement on the retina are more widely separated and the line itself must be proportionately increased. The same is true of the axial rays from the ends of the line *d-c*. Hence it is clear that the line *a-b* must become the line *a'-b'* and the line *d-c* must become the line *d'-c'*. Because of the increase of the length of the lines *a-b* and *d-c*, the lines *a-d* and *b-c* are more widely separated, becoming lines *a'-d'* and *b'-c'*, and we have, not a square, but the rectangular parallelogram *a'-b'-c'-d'*. The diagonal *a-c* has been rotated towards the vertical and becomes *a'-c'*; and the diagonal *d-b* has been rotated in the opposite direction, but also towards the vertical, and becomes *d'-b'*. They have both been rotated by the refraction of the astigmatic cornea towards the meridian of greatest curvature. The image-changes effected by this astigmatic cornea are, as shown in the figure: increase in the length of the lines parallel with the meridian of greatest curvature, an increase in the distance between the lines parallel with the meridian of least curvature, and a corresponding rotation of the diagonals toward the meridian of greatest curvature. The proper plus cylinder placed before this eye gives such aid to the least curved meridian of the cornea as to make its refractive power exactly equal to the unaided refractive power of the meridian of greatest curvature. The result will be a lengthening of the horizontal lines *a'-d'* and *b'-c'* into the lines *a''-d''* and *b''-c''* and a displacement of the lines *a'-b'* and *d'-c'* until they become *a''-b''* and *d''-c''*. Since two of the sides (*a-b* and *d-c*) of the square have been lengthened by the astigmatism and the remaining two sides (*a-d* and *b-c*) have been lengthened to exactly the same extent by the correcting plus cylinder, the figure *a''-b''-c''-d''*, seen by the corrected astigmatic eye, is a square. The cylinder, in changing the rectangular parallelogram *a'-b'-c'-d'* to the square *a''-b''-c''-d''*, has also rotated the diagonals *a'-c'* and *d'-b'* back to their original positions since the diagonal *a''-c''* coincides exactly with the diagonal *a-c*, and the diagonal *d''-b''* coincides with *d-b*.

If the astigmatism had been corrected by a minus cylinder the lines *a'-b'* and *d'-c'* would have been shortened into the lines *a-b* and *d-c;* the lines *a'-d'* and *b'-c'* would have been brought closer together, *a'-d'* becoming *a-d* and *b'-c'* becoming *b-c*, and the diagonals *a'-c'* and *d'-b'* would have been rotated back into the diagonals *a-c* and *d-b* respectively, so that the figure thus seen would be the square *a-b-c-d*. Thus it is shown that an astigmatic eye, corrected with a minus cylin-

der, sees the square with the same measurements as that seen by the non-astigmatic eye; while the square seen by the astigmatic eye, corrected with a plus cylinder, is magnified.

Turning the right side of Fig. 1 up it shows the image-changes when the meridian of greatest curvature is horizontal. In either case the lines parallel with the meridian of greatest curvature are made longer by the astigmatism, with a corresponding increase of distance between the lines parallel with the meridian of least curvature, and the diagonals are rotated towards the meridian of greatest curvature.

If there is astigmatism of one eye with the meridian of greatest curvature vertical and astigmatism of the same kind in the other eye with the meridian of greatest curvature horizontal, the former will see a square changed into a rectangular parallelogram longer sides vertical, while the latter would see the square similarly changed but with the longer sides horizontal. The images in such eyes would be dissimilar and could not be perfectly fused; correcting cylinders would make the images alike and thus make complete fusion possible.

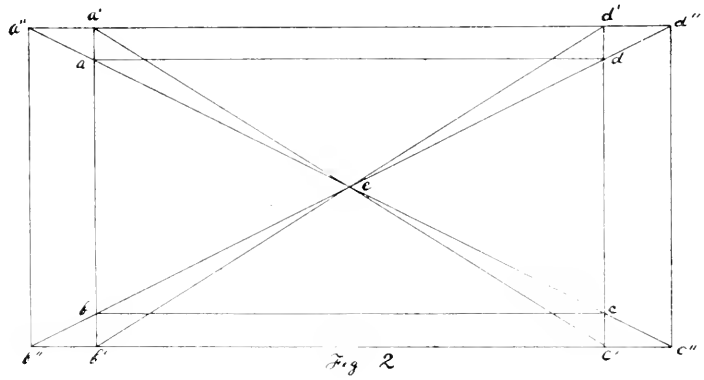


Fig 2

What is true of squares is true of rectangular parallelograms, as shown by Fig 2, in which there is the same proportionate lengthening of two of the sides by the astigmatism, and of the other two sides by the astigmatic correction with plus cylinders, also the same character of rotations of the diagonals, the principal meridians being vertical and horizontal.

Fig. 3 shows the image-changes when the astigmatism is oblique, the meridian of greatest curvature being at 135°. That part of the complex figure shown by *a-b-c-d* is a square as seen by a non-astigmatic eye. Looked at by the oblique astigmatic eye already mentioned, the diagonal *a-c* being at an angle of 135° is in a plane with the meridian of greatest curvature, while the diagonal *d-b* is in a plane with the

meridian of least curvature. For reasons already given in discussing Fig. 1, the diagonal *a-c* is increased in length by the astigmatism into *a'-c'*, while the diagonal *d-b* is neither altered in length nor direction. The sides of the square not being parallel with the principal meridians

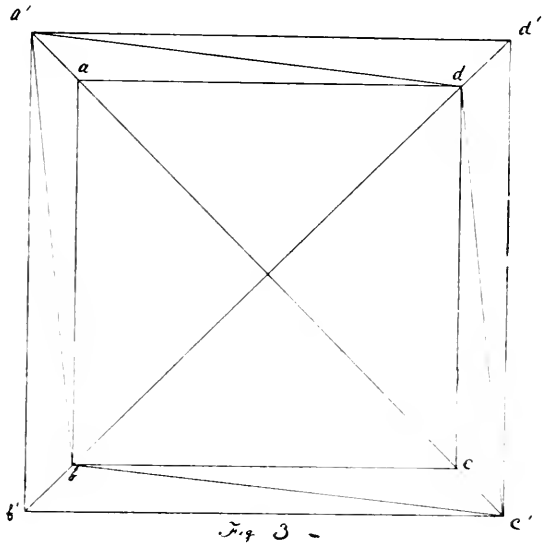


Fig. 3.

must be rotated towards the meridian of greatest curvature, *a-b* becoming *a'-b*, *a-d* becoming *a'-d*, *b-c* becoming *b-c'* and *d-c* becoming *d-c'*. The figure *a'-b-c'-d* is a non-rectangular parallelogram leaning down and to the right. A plus cylinder correcting the astigmatism will increase the length of the diagonal *d-b* into *d'-b'* to exactly the length of the diagonal *a'-c'* and at the same time will rotate the line *a'-b* to *a'-b'*, *a'-d* to *a'-d'*, *c'-b* to *c'-b'* and *c'-d* to *c'-d'*, thus converting the non-rectangular parallelogram *a'-b-c'-d* into the magnified square *a'-b'-c'-d'*.

(TO BE CONTINUED.)

A NEW PATTERN OF BIFOCALS FOR MYOPES.

By F. C. HOTZ, M. D.,
Chicago.

ILLUSTRATED.

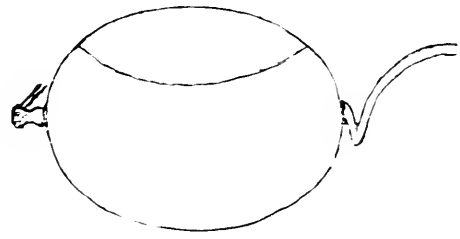
Bifocal lenses are usually so constructed that upon the lower portion of the full-correcting lens a small semilunar segment is cemented to adjust the refraction for near work. The upper edge of the segment being but a few millimeters below the center of the lens comes across the pupil if the visual line is slightly depressed below the horizontal plane. Now, in walking we do not look away towards the horizon, but towards the ground about 10 to 20 feet before us or at the people about us; and the visual line is directed downwards more or less and the edge of the segment coming in front of the pupil causes a very distressing visual confusion. The objects about us get so mixed up and unsteady that crossing a crowded thoroughfare becomes a very hazardous undertaking; one is in constant fear of running against somebody or being run over by the passing vehicles because one cannot truly judge the actual location of things. To avoid this disturbing effect the wearer of such bifocals turns his head down and his eyes up in order to see the sidewalk and objects before him clearly through the upper portion of his glasses—an awkward position of which the eyes soon get tired.

But I have found these bifocals unsatisfactory also in reading and writing. The smallness of the segment allows such a limited field that the slightest rotation of the eyes gets the edge of the segment across the pupils and causes a confusion of vision; hence the eyes are tied up, as it were, in one position; one is compelled to turn the head to follow the print along the line or to look from one object on the writing table to another.

These and other disadvantages account for the fact that many people can never get accustomed to bifocal lenses. I myself have found it positively impossible to wear them with any degree of comfort and helped myself by putting over my spectacles a pair of eyeglasses to enjoy clear distant vision. But, of course, this makeshift has also its inconveniences.

Now, all the objectionable features inherent in the bifocal lens are removed and for nearsighted people a very satisfactory bifocal lens is obtained if we set in the frame the lens appropriate for near work and add to its *upper* portion a segment to make up for the full correction of the myopia. The important part is the proper size and shape of the segment which must neither be too small nor too large. After

repeated trials I found the shape and size represented in the accompanying diagram the most satisfactory.



Its dimensions vary according to the size of the lens; for the so-called OO eye the segment should be 30 mill. long and 12 mill. high; for the O eye it should be 28 mill. long and 11 mill. high; and for the No. 1 eye the segment should be 26 by 10 mill.; the larger sizes are preferable for bifocal lenses.

In these bifocals the lowest point of the segment is 3 mill. above the center of the lens. The wearer, therefore, enjoys in reading the same large unobstructed field of fixation and can turn his eyes right and left with the same freedom as with the simple pair of reading glasses. On the other hand, the long dimension of the segment affords the eye a very wide field of distinct vision; it can freely turn right and left so as to cover a large piece of ground before the visual lines come across the edge of the segment. In walking I do not experience the slightest inconvenience or discomfort; within 10 feet in front of me I see the ground distinctly enough through the lower part of my glasses and beyond that distance I look through the segments; and in this transition from the lower to the upper part of the bifocal I do not notice at all where the pupil passes across the edge of the segment. Nor do I have to turn my head down or up to look through the lower or upper part of the lenses.

I have been wearing these new bifocals (— 6 D with — 2.50 D as segments) constantly during the past three months, on the street and in the operating room, for reading and ophthalmoscopic examinations; and I can really say they have been to me a source of intense pleasure; they are my dearest friends from whom I would not be willing to part for any consideration; they have got me as near to the condition of an emmetrope as mechanical processes possibly can do it.

The idea of this new bifocal lens was indirectly and unintentionally suggested to me by Dr. Southard of San Francisco. In his paper on an improved bifocal published in the *Annals of Ophthalmology and Otology* (July 1896) the illustration was printed upside down; when I

first looked at the diagram I thought his improvement consisted in placing the segment above instead of below: and after I recognized the mistake the thought still clung to me that the inversion of the segment might possibly be advantageous for myopes requiring different lenses for near and distant vision. I at once acted upon this inspiration with the happy results reported above.

For obvious reasons bifocals of this pattern would not be satisfactory to hypermetropes.

A CASE OF FOREIGN BODY IN THE CANALICULUS.

By LEWIS H. TAYLOR, M. D.,
Of Wilkesbarre, Pa.

The farmer, while probably exempt from many of the diseases and accidents to which the eyes of the artisan and miner are liable, is by no means free from the annoyance of foreign bodies in the eye. A few years ago a gentleman came to me for a troublesome conjunctivitis which had annoyed him for some weeks, and which dated from the entrance of chaff in his eye while he was engaged in threshing wheat. Upon careful examination I found a curved piece of wheat chaff firmly attached by its concave side to the bulbar conjunctiva. This had remained in his eye a full month and yet had done no serious injury. Its removal soon relieved all troublesome symptoms Another interesting case has recently come under my observation.

J. M . a young man about twenty-five years of age called November 13 1896, for a troublesome condition of his right eye which had lasted since September 28th, on which date he was engaged in threshing rye, and thought a rye beard had entered his eye. He went the next day to a skillful oculist for its removal. The latter after careful examination failed to find any foreign body and assured him that none was there and gave a wash for the inflamed condition existing. He now, November 13th. still thought there was something in the eye but at first I could find nothing. As he located the irritation near the inner canthus I took a small eye spoon and passed it gently over the caruncle. While doing so I noticed a slight protrusion from the upper punctum. This I succeeded in grasping with a pair of small forceps and removed a piece of rye beard three-sixteenths of an inch long. The eye was still irritated but a wash of boracic acid was all that was necessary to relieve this symptom.

The only interest attaching to the case was the peculiar location of the foreign body. As it would not be likely to wander from any other position in the eye and enter the upper canaliculus, it is quite likely that the piece was thrown directly into the punctum at the time of the accident. Being exceedingly small, light colored and almost entirely concealed, it was easily overlooked by the gentleman who made the first examination.

IRRIGATION IN PURULENT CONJUNCTIVITIS WITH A COMBINED RETRACTOR AND SULCUS-SYRINGE.

By GEO. M. GOULD, A. M., M. D. AND WALTER L. PYLE, A. M., M. D.
Of Philadelphia, Pa.

ILLUSTRATED.

Purulent ophthalmia is the most general cause of blindness. Rivere of Bordeaux (*Annales de Gynécologie, 1887*) states that ophthalmia neonatorum (preferably called *neonatorum conjunctivitis*) has been the cause of over 100,000 cases of blindness at present dependent on the charity of the European nations, and adds that it is responsible for one-third of all the cases of blindness in Europe. In this country investigators have reached similar conclusions. Yet despite the enormity of the ravages of this disease, it is a perfectly plausible proposition to say that if taken in time and correctly treated, purulent conjunctivitis is an easily curable affection. Some of the more sanguine observers, as Galezowski, contend that Crede"s method is absolutely uncalled for and sometimes harmful, and argue that to drop an irritant solution into the sensitive eyes of every new-born babe is cruel, as they believe that every case of this disease appearing in the first few days of life is readily cured without any resultant sequelae of significance.

Surely it seems that especial attention to the slightest sign of inflammation in the first few weeks after birth is a far more rational and satisfactory procedure than the prophylactic measure of Credé with the subsequent indifference of safety that occasionally follows it; however Crede"s method should be uniformly pursued in distinctly suspicious cases. The instillation of silver nitrate is no guarantee against the disease. Every mother or nurse should be carefully warned to watch the infant's eyes for, at least three weeks, and to summon a physician immediately on the sign of any inflammation. In the absence of subjective symptoms in treating infants, we should be doubly alert for objective signs of danger. It is particularly in hospital practice and in cases under strictly medical care that we can hope to suppress this deplorable evil of preventable blindness. Among the hopelessly ignorant there seems to be but little encouragement for the practice of scientific measures. The first and most valuable part of treatment is thorough irrigation at short intervals. This is the fundamental principle in the therapeutics of all antoinoculable and purulent processes. Remove the self multiplying cause and assist nature to combat the original infection. It is our opinion that most cases of purulent conjunctivitis may be cured solely by repeated irrigations with sterile water. Strong antiseptic applications are usually unnecessary. The infection soon gains access to tissues possibly

beyond the reach of local antiseptics, and moreover such substances in germicidal strength have generally a devitalizing effect on the tissues involved, and this is exactly what we wish to avoid. Every spark of vitality is needed to resist the invading process. Weaken the normal resisting power and the infection is soon beyond the reach of local treatment and the all-important tissues are forever injured or destroyed. Let cleanliness be Nature's assistant and only when the curative process is delayed let stimulating applications be applied. Silver nitrate is beyond question most valuable. Also in such cases the best hygenic conditions and tonic constitutional treatment is demanded. Feed the patient well, whether infant or adult.

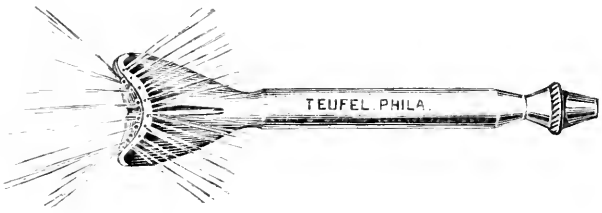
In view of its importance it is unfortunate that thorough and repeated irrigation of the sulcus is seldom effected. To cleanse at intervals of a half-hour every portion of an infected conjunctiva in an active state of purulent inflammation is a difficult task. The lids are tense and swollen. The palpebral and bulbar conjunctival surfaces are as it were glued together, making the depths of the sulci almost inaccessible. The pain in the manipulation is intense. An infant vigorously resists all efforts to open the lids, and even in the case of adults it is often quite impracticable under these circumstances. To be effectual irrigation must be thorough, and in the active inflammatory stage it should be repeated, at least, every half-hour. When we realize the difficulties of perfect cleansing in hospital cases, how much more are they augmented in dispensary and private cases, in which the operation is left to inexperienced members of the patient's family? Yet it is our duty to persist with the greatest patience, and under all disagreeable circumstances, in thorough cleansing, as therein lies the assurance of success.

What might be called the "golden rule" in these cases, is: *Without careful irrigation, all other treatment is unreliable; with perfect irrigation, other treatment is usually unnecessary.*

In the irrigation of the eyes we have had little mechanical or instrumental assistance offered to us. Some surgeons advise against the use of any hard substance in irrigation as they fear injury to the cornea in manipulation. Of the few methods suggested, that of Kalt, with the irrigation-tube, seems to have produced the best results.

We have had made an instrument which seems to answer all the requirements of a satisfactory sulcus-syringe. It is in all essentials simply a lid retractor, such as every one uses in operations and in examining inflamed eyes, etc., but made hollow for the passage of a liquid to all parts of the sulcus. It is perforated at its edges and on both its bulbar and palpebral surfaces, to allow the passage of liquid

through and about it. The small holes are depressed to prevent occlusion by close contact with the conjunctiva, and both services are grooved to allow a drainage flow from the sulcus. There are no ragged edges or protrusions to injure the eye and there is no danger of the fluid being squirted back into the operator's eyes. The re-



tractor may be made of metal or hard rubber. It is best used with a fountain-syringe, the pressure being regulated by the height of the reservoir above the patient's head, the current controlled by a stop-cock, or by pressure on the tubing near the retractor. The instrument is also adapted for adjustment to a hypodermic syringe, having a thread the same size as an ordinary hypodermic needle.

With this retractor-syringe the eye may be easily and thoroughly washed at the shortest intervals, as there is little pain in its introduction. Every twenty minutes is the least interval ever necessary. At least a half-pint of water should be used at each irrigation and during the cleansing the retractor should be moved about slightly in the sulcus. The liquid should be drained over the side of the face into a basin, care being taken that it does not enter the ear, nose or mouth. This is particularly necessary in infants. Any solution may be used, although sterile water, or possibly a weak pure boric acid solution will be found effective. The fluid should be used at body-temperature, unless for special reason the application of heat or cold is desired, which may be readily applied in this manner. The solution, gently run through the syringe, also offers an excellent substitute for wet packs and fomentations in certain cases of ocular inflammation. Thorough applications of such stimulating and astringent solutions as silver nitrate may be made by the retractor-syringe with the hypodermic-barrel attachment. Before and after use, it is of course cleansed and sterilized.

We are indebted to Mess. Jacob J. Teufel & Brother, of Philadelphia, for the manufacture of this instrument, and for the accompanying cut.

ANOPHTHALMOS.

By J. WALTER PARK, M. D.,
Of Harrisburg, Pa.
Ophth. Surgeon Harrisburg Hospital, Childrens' Industrial Home, Home of Friendless

On February 17th, 1896, a child two weeks old was brought to our city hospital by its parents, both of whom were Austrians; the father was thirty and the mother about forty years of age. The father had normal vision in both eyes, but the mother was highly myopic, with extensive choroidal changes encroaching upon both macular. She was practically blind. She says she has been so since childhood. The father was fairly intelligent, but the mother was very ignorant. The child was well developed and apparently in good health. The eye-lids were adherent at their margins, with the exception of about one-eighth inch. The canaliculi were absent in both eyes. After giving the child some chloroform I separated the lids and explored the cavities of both orbits, but did not find even a rudiment of a globe.

In looking up the literature upon this subject, I find quite a number of authors who do not speak of it at all. LANG, of London, in *Norris & Oliver's System of Diseases of the Eye*, page 420, says that dissections generally show small rudimentary globes at the apex of the orbit, but also reports ten cases through the *Royal London Oph. Hosp. Repts.* in which no rudimentary globes could be found. Dr. ARTHUR J. GILLETTE, of St. Paul, Minn., wrote to me he had a case of congenital lateral curvature of the spine, which he attributes to intra-uterine rickets, in which there was a congenital absence of the right eye-ball. NOYES, "*Diseases of the Eye*," page 646, reports Haab as having examined an idiotic girl twenty-seven years old, in which the eye-balls were simply rudimentary, the muscles well developed, the optic tract and chiasm were wanting, etc. SCHMIDT-RIMPLER in *Roosa's Translation*, page 535, reports one case in which a small white speck as large as a pea was visible. FUCHS, in his *Text-Book of Ophthalmology*, page 328, seems to think true anophthalmos has not yet been determined. LANG thinks they are rare. I shall be glad to receive reports of all such cases that come under the notice of my ophthalmic friends.

AN OPTOMETRE—A FIXED FORM OF APPARATUS FOR THE TRIAL LENSES, AND FOR THE DETERMINATION OF THE ANOMALIES OF OCULAR BALANCE.

By S. D. RISLEY, M. D.,
Of Philadelphia, Pa.
Attending Surgeon Wills' Eye Hospital; Professor of Diseases of the Eye
Philadelphia Polyclinic and College for Graduates in Medicine

ILLUSTRATED.

The careful study of the abnormalities of refraction and ocular balance, of late years has served to demonstrate not only the inconvenience, but the insufficiency of the trial frame for accurate and scientific work.

The trial frame even in its best forms is not only cumbersome and fatiguing to the patient, but in the selection of cylindrical glasses leads to frequent and almost unavoidable error in ordering the degree at which the cylinder axis should be placed, since resting as it must do upon the patient's nose and ears, its frame necessarily conforms to the irregularities of the skull.

It is not exceptional to find one ear higher than its fellow, or variations in the conformation of the face, which may easily mislead the surgeon in estimating the position of the frames in their relation to a horizontal line. I have convinced myself that it is very easy to make an error of ten or more degrees in my estimation of the position of the trial frames. That is to say, when the trial frame seemed by ordinary observation to occupy a horizontal position, an error was shown as soon as an accurately leveled bar was thrown in front of the patient's face. Since the degrees on the arc of the trial frame are measured from the horizontal line, it is obvious that this line must be maintained in order to avoid error. If the horizontal line deviates one or more degrees, the error is necessarily transferred to all the readings on the arc of the frame. It is quite possible, for example, to order the axis of a cylinder at 90°, or vertical to a horizontal line, when it should be placed at 80° or 100°, i. e., 10° one way or the other from the vertical, an error quite sufficient to cause trouble in many cases. If, however, the frames, when at rest, fit satisfactorily, the pressure of the finger in rotating the cylinder in the frame may very easily cause many degrees of deviation.

It is essential therefore for the accurate determination of the exact degree at which the cylinder axis should be placed, to have some fixed form of apparatus so that the horizontal line may be accurately determined and maintained. This is however of minor importance when compared with the errors occasioned in the effort to measure the binocular balance. I have elsewhere (*University Med. Mag., Jan. 1895*)

urged the important relation existing between the anomalies of refraction and ocular balance, and that the latter could be determined accurately only through the careful optical correction of the former. Now to this end it is highly important that the optical centres of the correcting glasses should coincide with the pupil of each eye, both vertically and horizontally. Otherwise the prismatic effect of decentered glasses reveals itself in apparent anomalies of ocular balance, or may conceal existing defects by a partial or total prismatic correction.

It is difficult or impossible to place or remove prisms from the trial frame without at the same time causing certain additional results from a temporary decentring of the correcting glasses.

In the determination of the lateral balance, or the power of the external or internal recti muscles, this may not be of serious importance, since the great strength of these (as compared to that of the vertically acting muscles) makes less relative error, but in the use of the stronger prism necessary to determine the strength of the horizontally acting muscles it is even more important that the horizontal line should be maintained, since the inclination of the base, upward or downward, has the effect of a prism placed vertically.

To avoid these errors it is essential, as Dr. Stevens has also urged, that a fixed apparatus should be employed. The apparatus here presented was devised in its simpler and earliest form in 1874, and a description published in the (*American Journal of the Medical Sciences,*) *for October, 1875.**

It has been modified from time to time, to meet the requirements of added experience, and to secure additional convenience.

In its present form it is firmly fixed to the arm of a comfortable chair, or may be adapted to a firm floor-stand which may rest at the side of the chair occupied by the patient. The bar which supports the holder or frame for the trial glasses, rotary prisms, stenopaic slit, Maddox rod, diaphragm for correction of high myopia through dilated pupils &c., swings on a vertical shaft to the front of the patient, and may be adjusted at any required height.

The holders are centered by a double-acting screw. A weighted pointer moving over a segment of a circle, fixed to the base line of the holders, enables the observer to accurately determine that the holders are level, this being effected by a leveling screw.

The rotary prisms devised by the writer (*Trans. Amer. Oph. Soc. 1889*) is adjusted in a special cell for its reception, which turns aside out of the way when not in use, but is readily turned back before the correcting glasses when required.

*"A new Optometer for measuring the Anomalies of Refraction and Field of Vision," by S. D. Risley, M. D.

For rapid work one of these prisms should be placed on each side, one with its zero point placed at 0° on the trial frame or holder, the other at 90°.

A bar graduated in centimetres half a metre in length is attached to the front of the apparatus, carrying the test cards for work at the near point, and for determining the range of accommodation. This may be turned aside when not in use.

The accompanying cut makes any extended description unnecessary.

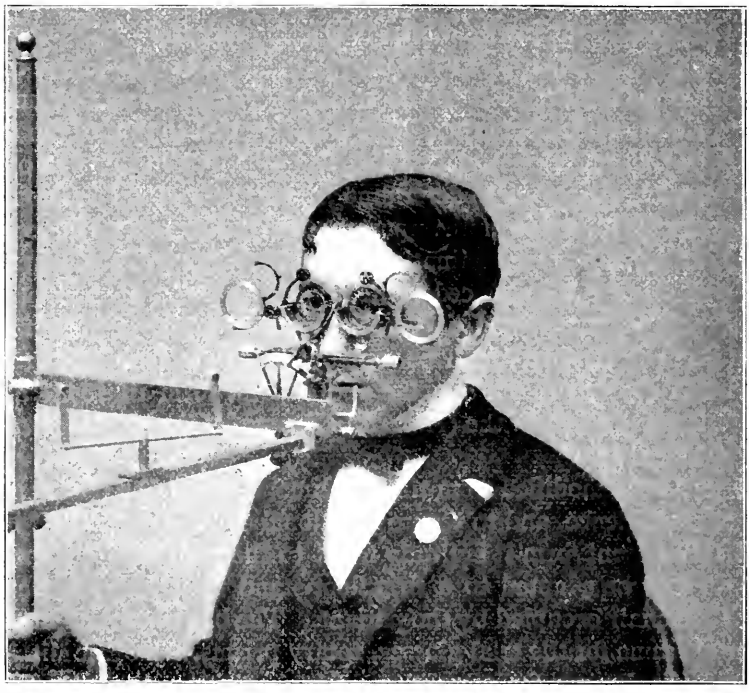


Fig. 1.—The Optometre *

A series of cells are so adjusted to the holders as to be rapidly turned into place before the eye, or turned aside when not required. Any test object which can be made to fit in an ordinary trial glass cell can be placed in these adjustable parts of the holder, e. g., the Maddox rod or the double prism, or a stenopaic slit.

The anterior one is designed especially for the rotary prism. An additional arm contains a grooved wheel or pulley, the groove being fitted with a rubber band. This is designed to rest upon the rim of

* The apparatus is manufactured by the Fox Optical Company, Philadelphia, while the rotary prism is now made by many of the leading optical firms.

the cylinder cell, then turning the wheel by contact with the finger the cylinder is rotated before the eye with greater facility than with the finger in contact with edge of cell itself. The writer prefers to use cylinders without a handle to the containing cell.

The posterior surface of the holders, that is to say the side nearest the eye of the patient, is converted into a complete circle by flat graduated rings, through which the patient must look. These, to-

Fig. 2 —Rotary Prism.

gether with the test glasses, or other objects which fit in the grooves in the holders, give rise to the same effect as is secured by looking through a tube, as, e. g., that of a microscope or opera glass, the field appearing as a circular disc.

The conditions thus secured are unusual and remove in a large measure the temptation to neutralize existing defects of refraction by accommodation, or to overcome by the accustomed muscular tension the abnormalities of ocular balance.

This apparatus has been in constant use in my work for a long time. It is therefore with the conviction that it will prove of service to others that it is once more presented to my colleagues.

I can but think that the exercise of a little patience, until one becomes accustomed to the employment of a new instrument will demonstrate the claim that is made for the Optometre, viz: that it is more convenient than trial frames, and also a means of securing greater accuracy in the study and treatment of a very troublesome group of patients.

STRABISMUS DUE TO UNDEVELOPED OR CONTRACTED CHECK LIGAMENT, AND OPERATION FOR ITS RELIEF.

BY JOSEPH ELLIOTT COLBURN, M. D.

Professor of Ophthalmology in the Chicago Policlinic.

ILLUSTRATED.

The eye is suspended in the orbital cavity, and held in place by two classes of tissues.

1st. The dynamic—the recti, and oblique ocular and orbicular muscles.

2nd. The static—the capsule of Tenon, the check ligament, orbital fat and orbital connective tissue.

The recti muscles together with the lids serve to hold the eye firmly against the supporting or suspensory structures, as well as to direct their movements. The capsule of Tenon serves as a socket in which the eye may rotate, and the orbital facias, (one division of which is the check ligament) connective and adipose tissue serving as a supporting, restraining bed in which it rests.

"To understand the *special bands* mentioned above, we must follow the sheath of each muscle forwards, when we find that, while it is rather loosely applied to the muscular belly in its posterior two-thirds, it then suddenly becomes thicker and is firmly attached to the muscle for some distance before finally leaving it, and is thereafter often accompanied by some muscle-fibres. The best developed of these bands, the *external check ligament*, passes forwards and outwards to the outer angle of the orbit, helping to support the lachrymal gland on its way, and is inserted near the orbital edge immediately behind the external palpebral ligament. The inner band, or *internal check ligament*, is larger than the outer, but not so thick; it passes forwards and inwards into the upper part of the lachrymal crest and just behind it. These two bands, external and internal, come from the sheaths of the corresponding recti muscles. From the sheath of superior rectus come two thin bands, one from each border. The inner joins the sheath of the tendon of the superior oblique; the outer goes to the external angle of the orbit, assisting in the support of part of the lachrymal gland. The sheath of the inferior rectus is thickened in front, and, on leaving the muscle, goes to the middle of the inferior oblique, splitting to enclose it; it then passes to be inserted into the lower inner angle of the orbit close behind its margin about midway between the internal check ligament and the orbital attachment of the inferior oblique." (Morris' Human Anatomy.)

The relative positions of the two eyes may depend upon the bony structure of the orbit and the development of the orbital soft structures.

The relative or coordinate movements depend upon the neuromuscular status of the dynamic system of the eye, and upon the modifying influence which the facias exert, as they may be normal or abnormal in development.

The development of the bony structures forming the boundaries of the base of the cavity of the orbit seems to modify the development of the orbital facias and their relation to the eyeball, as convergent squint and exophoria, when the plane of the outer canthus is far posterior to that of the inner canthus, or the base of the orbital cavity at a greater angle to the plane of the face. It is my purpose, in a later paper, to tabulate and report the results of my examinations in this direction, both in manifest and latent errors.

Strabismus may be due to:

1st. Faulty or atypic bony development.

2nd. Faulty or atypic development of the soft structures.

3rd. Faulty or atypic development of the motor oculi muscles.

4th. Over or under stimulation of the motor centers of the recti muscles resulting from errors of refraction or imperfect coordinating impulse, and as a result, thickening and contraction of the facias, receiving their nutrition and nervation from a common source.

5th. Lowered visual acuity, or interference spots in the media. Or any or all of the above conditions combined.

Coordinate movements of the eyes may never have taken place, or having taken place, may, from some change in development or conditions, become periodically or permanently interrupted.

The four cases to which I desire to call your attention, belong to the class, —*strabismus due to faulty development of the static soft structures.*

CASE I Mr. F., aged 29 years, myopic, —13 D., ⊃—3 D. cy., ax 180 Vision $=\frac{20}{40}$; convergent strabismus=45°; limited outward rotation of both eyes, the right eye giving only 15° to temporal side of median line, the left eye from 5° to 10°; 4° of left hyperphoria. Every act of remote fixation was followed by pain, lachrymation, mental confusion and vertigo. Proximal fixation was accomplished with comparative ease, with —4 D lenses; conscious at all times of double vision. When walking, driving or generally employed, closed alternately right or left eye according to the line of fixation, and posed the head to favor the convergence of the fixing eye.

Inspection: Head fixed with face in plane of body, and erect. Right eye deeply set, lids small, aperture short and upper lid drooping, while lower lids showed ⅛ inch of sclera below the cornea. The eye responded promptly to the outward rotation up to the point of limitation, 15°, then made several jerky movements and fell back to the median line.

Left eye somewhat larger in aperture; the upper lid did not droop and the lower just reached the lower margin of the cornea; movements to the temporal side gave about the same nystagmic spasms as did the right. Red glass, 4° hyperphoria. Javal, O. D., 1.50 D. 90; O. S. 1 50 D. 75.

Correction, R.—13 D.⌒—3 cy., ax. 180.
L.—13 D.⌒—3 cy., ax 15.

Ophthalmoscope: small cornea; large post-staphyloma; small choroidal scars; macula normal and retina unchanged in its immediate area. When the eye was strongly rotated to the temporal side, the inner canthus was raised and tense, and seemed to restrain the movement of the eye beyond a certain point. Operation for relief successful.

Case II: M. C., female, aged 21. Compound hypermetropic astigmatism= 2S⌒—1.75, cy. 90 each eye; vision=$\frac{20}{25}$. Habitual pose of the head to the right ride; convergent strabismus, right eye fixing, 60° ; rotation outward toward temporal side to median line only.

The eyes were cocainized and forced abduction attempted. This was successful only in part, as the eye could not be drawn to 25° abd. The voluntary effort of abduction then gave 10° to temporal side of median line.

This patient, also, used right and left eye alternately according to the field of fixation. There was nothing unusual about the conformation of the lids or outward manifestation of the bone structures. Any attempt to rotate the eye outward was accomplished by pain, nervous dread and working of the muscles of expression. The right eye was used when walking, riding or driving; the left for reading, writing or any close work. The patient had been subject to headaches, almost daily, from childhood. The correction of the error of refraction was followed by complete relief. There had been no change in the amount of squint The relief sought, was for improving personal appearance. The result of the operation, hereafter described, was perfect binocular fixation through the normal range.

Case III. A. F., female, aged 22 years, strabismic at birth. Tenotomies and advancements were made one year before coming to my clinic (1894) without favorable results. Plane of base of the orbital angle, 15° .

R. vision=$\frac{20}{30}$ with + 2 D.; L. vision= $\frac{20}{24}$ with + 4 D.

Right eye fixing, head posed to the right allewing 30° convergence with left cornea at inner canthus. The right eye was used for the entire range. The left eye could only be forced to 40° , with right eye covered. She had never been able to rotate the left eye outwards.

October 12, 1895, operated upon right eye correcting all but 29° . October 20, found 40° convergence in left eye; right eye mobile and fixing at median line. At this date corrected the balance of the error, as described in latter part of paper.

The result in this case was a slight divergence of 10° , which manifested itself 4 or 5 months after the last operation. This was corrected by relieving the externus of the left eye, as an error had been made by advancing it too much.

Case IV. Miss G., aged 19, was referred to me by Dr. H. P. Newman, August, 1893. Marked strabismus; habitual fixation with right eye; vision normal. The contour of the face and head, symmetrical; eyes rather deeply set; plane of base of orbit formed an angle of 10° . Right eye fixing, left eye converged to 65° ; left eye fixing, right eye converged to 40° . The head habitually posed towards the right side, allowing for fixation at 22° convergence. Forced abduction of either eye would scarcely bring eye to median line. Most comfortable vision was obtained by throwing the head slightly backwards and to the right. For proximal

fixation the eyes were used alternately according to the field desired; was never conscious of double vision.

Following the operation, as described later, there was great difficulty in securing coincident consciousness of binocular fixation, though perfect position was secured.

After some months, consciousness of the second image could be realized, and binocular fixation was obtained throughout the normal range.

Strabismus, in this class of cases, is not due primarily to too short internal recti or insufficient external muscles, but to a contracted or undeveloped internal check ligament, restraining the abductors in their attempt to produce parallelism, or to rotate the eyes through their entire lateral range.

Two of these cases were hypermetropic one myopic and one emmetropic; all were cross eyed at birth and never practiced coordinate fixation. All were conscious of the sensation of being eye-tied, and of the relief following operations, according full range of rotation without change of the position of the head for any part of the normal field.

OPERATION: Enter the conjunctiva just to the canthus side of the rectus muscle attachment. Incise the tendon, as indicated in plate I, A, taking care not to extend the cut in the conjunctiva and orbital fascia beyond the cut of incision, this can be done by having an assistant hold the tissues out of the way till the tenotomy is completed. Now grasp the conjunctiva and fascia, and extend the incisions upwards and downwards to the extent of 2 to 5 m. m. (Plate III., a. b.) cut through the check ligament as described by *line of incision*, (A. in plate II.) Bring angles A. and B., including conjunctiva and orbital fascia (sub-conjunctival layer of check ligament) together with a suture, and tie, with result as indicated at C. plate III; make measurement of the operation up to this point, and, if necessary, advance the opposing muscle to secure the desired result.

The operation for advancement referred to is the one described by Doctor Stevens, and indicated at B. plate I.

(Plates on page 32.)

PLATE I

A. Line of incision in graduate tenotomy.

B. Advancement of tendon.

b Excised portion of tendon.

S. S. Sutures.

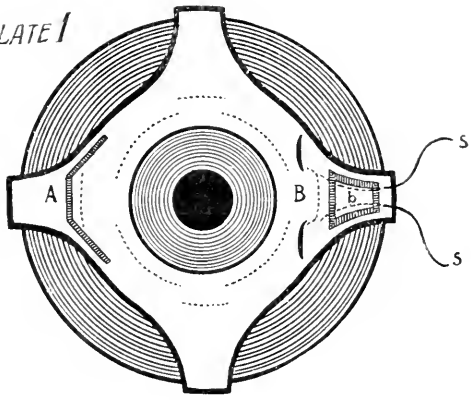
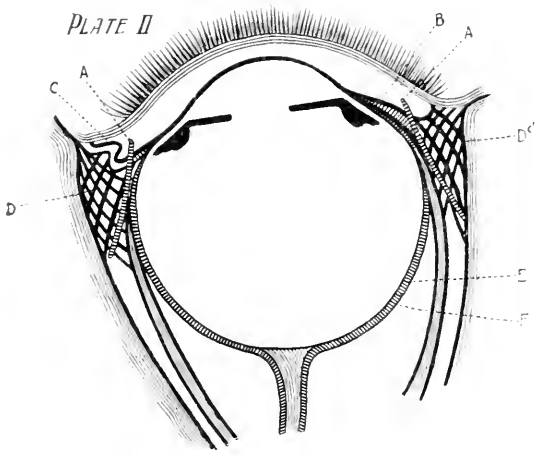


PLATE II



A. A. Lines of incision

B. Conjunctiva.

C. Plica Semilunaris

D. Internal Check Ligament.

Dd External Check Ligament.

E. Space.

F. Tenon's Capsule.

A } Incision through conjunctiva and check ligament.
B }

C. Result of bringing A and B together with a suture.

D. Lines of cut in tendon.

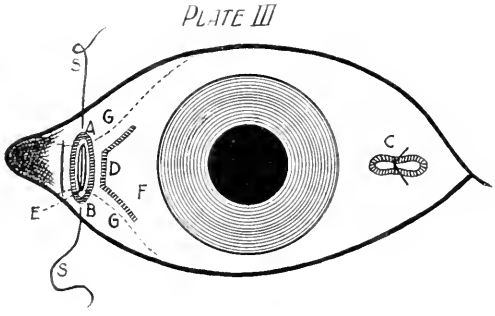
E. Check Ligament.

F. Conjunctiva.

G. Expansion of tendon. internal rectus.

S S. Sutures.

PLATE III



CORRESPONDENCE

THE OPHTHALMIC RECORD.

1102 RELIANCE BUILDING.

T. A. WOODRUFF, M. D.,
EDITORIAL SECRETARY

CHICAGO, November 24th, 1896.

THOMAS A. EDISON, Esq., West Orange, N. J.:

DEAR SIR: Having seen in the newspapers several accounts of investigations made by you upon the blind with the Roentgen ray, we take the liberty of addressing you with a view of securing some definite knowledge of the work you have done in a department that is of interest to Ophthalmologists, and beg to ask you for a paper on the results of your investigations for the January number of the OPHTHALMIC RECORD. Such an article would be read with much interest by Ophthalmologists throughout the country.

An early reply will greatly oblige.

Yours very truly,
T. A. WOODRUFF.

CABLE ADDRESS
"EDISON, NEW YORK"

FROM THE LABORATORY
OF
THOMAS A. EDISON.

PHONOGRAPH DICTATION.

ORANGE, N. J., Dec. 15, 1896.

DR. T. A. WOODRUFF, 1102 Reliance Building, Chicago, Ill.:

DEAR SIR: In reply to your favor of the 24th ult., I beg to state that in the course of experiments I only made the observation that one blindfolded can see with the X ray. I do not want to go into the subject any further as it is out of my line.

Yours truly,
THOS. A. EDISON.

TO THE MEMBERS OF THE MEDICAL PROFESSION.

I would be pleased to have an expression from you, either personally or through some medical journal, as to the relations of the lay-publishing firms of medical journals and the profession. The request is suggested by the fact that Messrs. Wm. Wood & Co., of New York, refuse to permit the editors of "The American Year-Book of Medicine and Surgery" to use in our abstracts of Medical Progress articles and illustrations first printed in the "Medical Record" and the "American Journal of Obstetrics."

This decision seems to me to be wrong for the following reasons:—

1. IT PREVENTS THE DISSEMINATION OF MEDICAL KNOWLEDGE. The Year-Book condenses, systematizes, and criticises the year's medical work in a shorter space and more permanent manner than the journals, and has thousands of readers no single journal can claim or hope to reach. Every physician writes and publishes articles in order that every member of the profession may, if possible, learn of his work, and that science and progress may thus be furthered and humanity benefited. To interfere with such dissemination of our literature in publications is, I think, discourteous and unjust to the profession and an injury to Medical Science.

2. This injustice and injury to Medicine becomes all the more striking when physicians do not receive a cent of pay for contributions, from the publication of which the lay-publisher is supposed to make considerable financial profit.

3. No other publishers in the world, not even those who pay authors for their contributions, have in the least objected to our reproduction of quotations, abstracts, and illustrations from their journals.

Do you wish to limit the dissemination of your contributions to Medical Science by such an exclusion of them on the part of publishers from reputable publications? IS THIS LITERATURE THE PROPERTY OF YOURSELF AND OF THE PROFESSION OR NOT? Does your gift of it to a journal make it the private property of the publishers of that journal? Is it not rather a loan for temporary use only?

Will you not hereafter demand that there be printed with your article that the right of abstracting the text or reproducing illustrations is guaranteed?

Sincerely yours,

GEO. M. GOULD.

119 S. 17th Street, Philadelphia, Pa.

Dec. 1896.

REVIEWS.

Some Preliminary Experiments on Vision without Inversion of the Retinal Image. — By Dr. George M. Stratton, University of California. *The Psychological Review*, November, 1896. Page 512. This interesting paper, read at the Third International Congress for Psychology at Munich last August, records an investigation of what has long been regarded as a fundamental proposition in physiologic optics. Prof. Stratton first states the two principal theories of upright vision. The first, which he refers to as the projection theory, assumes that objects are projected into space in the directions in which the rays of light fall upon the retina. The crossing of these lines of direction within the eye requires that if the subject is to be projected right side up the retinal image must be inverted. The second theory, which may be termed the eye movement theory, holds that the movements of the eye and our perception of the direction of such movements are the means by which we judge of the spatial relation of objects in the visual field. Upper and lower, according to this theory, mean positions which require an upward or downward movement of the eye to bring them into clear vision. But an upward movement of the eye brings into clear vision only what lies below the fovea on the retina. So that here too the perception of objects as upright requires that their retinal images be inverted.

Is the inverted image a necessary condition of our seeing things in an upright position? The method of approaching the problem was to substitute an upright retinal image for the normal inverted one and watch the result.

This was done by binding on the eyes a simple optical contrivance constructed on the following principle: If two convex lenses of equal refractive power be placed in a tube at a distance from each other equal to the sum of their focal distances, the eye in looking through the tube sees all things inverted, but in other respects the image remains unchanged. The image cast on the retina is as if the whole field of view had been revolved on the line of sight through an angle of 180°. All light other than that which comes through the lenses must, of course, be carefully excluded by making the instrument fit exactly the inequalities of the face by means of black linings and pads. For if light were permitted to enter the eyes otherwise than through the lenses, the observer would be subjected to both upright and inverted images, and the purity of the experiment would be lost.

Inasmuch as the size of the visual field was of considerable im-

portance in the experiments Stratton first used large and thick lenses but these were found to be too heavy for long-continued wear, so he substituted for each of the lenses in the tube *two* double convex lenses, placed close together on the same axial line. In this way before either eye was a tube containing a pair of good lenses of equal focal length giving a clear visual field with a compass of 45°. The instrument can then be worn without discomfort.

The experimenter now discovered however, that his scheme to employ binocular vision was impracticable owing to the strain upon his convergence and so was obliged to use but one eye, the other being covered with a black shade.

The instrument was bound upon his face at 3 o'clock in the afternoon and worn without pause until 10 in the evening. The eyes were then closed, the instrument removed and a bandage placed over the ocular region.

Next morning at 9.30 the lenses were again carefully adjusted to the closed eyes and again worn until ten o'clock p. m. On the third day the instrument was worn until noon and then removed. In all the lenses were continuously worn while the eyes were functionating for 21½ hours.. This was freely admitted by Dr. Stratton to be too short a time to expect pronounced results in breaking a life-long and inherited habit but from certain indications the writer felt justified in prophesying what would result if the time consumed in the experiment had been much more prolonged. The time was spent entirely indoors, watching the scene on the street below, watching the movements of feet and hands, experimenting on the changes which occurred in the visual field in connection with particular movements of the head or of the whole body, grasping and handling seen objects—in short trying to crowd as varied an experience as possible into the brief time at my disposal.

The experience that followed the wearing of the instrument just described and the deductions that the experimenter drew from it are as follows: All images at first appeared to be inverted; the room and all in it seemed upside down. The hands when stretched out from below into the visual field seemed to enter from above. Yet although all these images were clear and definite, they did not at first seem to be real things, like the things we see in the normal vision, but they seemed to be misplaced, false or illusory *images* between the observer and the objects themselves. For the memory-images brought over from normal vision still continued to be the standard and criterion of reality. The present perceptions were for some time translated involuntarily into the language of normal vision; the present visual percep-

tions were used simply as signs to determine how and where the object would appear if it could be *seen* in one way and *thought of* in a different way. This held true *also* of anybody else, for the parts of my body were *felt* to lie where they would have appeared had the instrument been removed; they were *seen* to be in another position. But the older tactual and visual localization was still the *real* localization.

All movements of the body at this time were awkward, uncertain, and full of surprises. Only when the movement was made regardless of visual images, by aid of touch and memory alone—as when one moves in the dark—could walking or moving of the hand be performed wtth reasonable security and directness. Otherwise the movement was a series of errors and attempts at correction, until the limb was finally brought into the desired position in the visual field. The reason for this seems partly to have been that the reconstruction of the visual field in terms of the normal visual experience—the translation before spoken of—was never carried out in all the details of the picture. In general, or in the main outlines, things might be referred to the positions they would have in normal vision, but the new visual field was in many details accepted just as found, and was acted upon without any translation whatever. So that when movements were made as if the visual signs meant just what they had meant in normal vision. the movements of course went astray. The limb usually started in the opposite direction from the one I really desired. Or when I saw an object near one of my hands and wished to grasp it with that hand, the *other* hand was the one I moved. The mistake was then seen, and by trial, observation, and correction, the desired movement was at last brought about.

As I moved about in the room, the movement of the visual images of my hands or feet were at first not used, as in normal vision, to decide what tactual sensations were to be expected. Knocks against things in plain sight were more or less of a surprise. I felt my hand to be in a different position from that in which I saw it, and could not except by cool deliberation, use its visual image as a sign of impending tactual experience. After a time, however, repeated experience made this use of the visual image much less strange; it began to be the common guide and means of anticipation. I watched my feet in walking and saw what they were approaching, and expected visual and tactual contact to be reported perceptionally together. In this way the limbs began actually to feel in the place where the new visual perception reported them to be. The vivid connection of tactual and visual perceptions began to take away the overpowering force of the localization lasting over from normal vision. The seen images thus became *real*

things just as in normal sight. I could at length *feel* my feet strike against the *seen* floor, although the floor was seen on the opposite side of the field of vision from that to which at the beginning of the experiment I had referred these tactual sensations. I could likewise at times feel that my arms lay between my head and this new position of the feet; shoulders and head, however, which under the circumstances could never be directly seen, kept the old localization they had had in normal vision, in spite of the local difficulty that the shape of the body and the localization of hands and feet just mentioned made such a localization of the shoulders absurd.

Objects lying at the moment outside the visual field (things at the side of the observer, for example) were at first mentally represented as they would have appeared in normal vision. As soon as the actual presentation vanished, the new relations gave way to the old ones brought over from the long former experience. The actual present perception remained in this way entirely isolated and out of harmony with the larger whole made up by representation. But later I found myself bringing the representation of unseen objects into harmonious relation with the present perception. They began now to be represented not as they would appear if normal vision were restored, but as they would appear if the present field of vision were widened or moved so as to include them. In this way the room began to make a whole once more, floor and walls and the prominent objects in the room getting into a constant relation to one another, so that during a movement of the head I could more or less accurately anticipate the order in which things would enter the visual field. For at first the visual search for an object outside of the immediate sight was quite haphazard; movements were made at random until the desired object appeared in sight and was recognized. But now the various lines of visual direction and what they would lead to were more successfully held in mind. By the third day things had thus been interconnected into a whole by piecing together the parts of the ever changing visual fields.

As the relation of the visual field to the observer, the feeling that the field was upside down remained in general throughout the experiment. At times, however, there were peculiar variations in this feeling according to the mental attitude of the observer toward the present scene. If the attention was directed mainly inward, and things were viewed only in indirect attention they seemed clearly to be inverted. But when, on the other hand, full attention was given to the outer objects, these frequently seemed to be in a normal position, and whatever there was of abnormality seemed to lie in myself, as if head and

shoulders were inverted and I were viewing objects from that position, as boys sometimes do from between their legs. At other times the inversion seemed confined to the face or eyes alone.

On removing the glasses on the third day there was no peculiar experience. Normal vision was restored instantaneously and without any disturbance in the natural appearance or position of the objects.

The experiment was of course not carried far enough to see the final aspect the experience under these conditions would assume. But the changes which actually occurred, even the transitory feelings the observer at times had, give hints of the course a longer experiment of this kind would take. I might also say that the main problem—that of the importance of the inversion of the retinal image for upright vision—had received from the experiment a full solution. For if the inversion of the retinal image were absolutely necessary for upright vision as both the projection theory and the eye-movement theory hold,it is certainly difficult to understand how the scene as a whole could even temporarily have appeared upright when the retinal image was *not* inverted. As was said, all things which under the conditions could be seen at all repeatedly appeared to be in normal relation: that is, they seemed to be right side up. Only certain parts of the experience (i. e., head and shoulders), upon which under the circumstances vision could give no report at all, because these parts could not be brought directly into the visual field, seemed to be in abnormal relation to the scene. That these parts of the body should have stubbornly refused to come into harmony with the new arrangement is easy to explain. The only visual experience I have had of them was the *normal* visual experience, and this remained firm in memory without the possibility of displacing it by repeated contradictory visual perception under the new conditions. But of those parts of the body which could be seen, the new appearance and localization was able to drive the old from the field, because the new localization by sight showed a perfect and constant relation to the reports by muscular and tactual perception. No doubt the merely tactual experience of the unseen parts of the body and of their relation to the seen parts must inevitably have produced in time a new indirect visual representation of these unseen parts which would displace the older representation brought over from normal vision. The gradual organization of the whole experience would certainly produce this result, although it would undoubtedly require more time in the case of the unseen parts of the body than in that of the parts plainly visible.

In fact, the difficulty of seeing things upright by means of upright retinal images seems to consist solely in the resistance offered by the

long-established previous experience. There is certainly no peculiar inherent difficulty arising from the new conditions themselves. If no previous experience had been stored up to stand in opposition to the new perceptions, it would be absurd to suppose that the visual perceptions in such a case would seem inverted. Any visual field in which the relation of the seen parts to one another would always correspond to the relations found by touch and muscular movement would give us 'upright' vision, whether the optic image lay upright, inverted, or at any intermediate angle whatever on the retina. Only after a set of relations and perceptions had become organized into a norm could something enter which was in unusual relation to this organized whole and be (for instance) upside down. But a person whose vision had from the very beginning been under the conditions we have in the present experiment artificially produced, could never possibly feel that such visual perceptions were inverted.

We trust that Dr. Stratton will pursue this important investigation—of especial interest to students of optical physiology and the psychology based upon that study.

CASEY WOOD.

Study of Ophthalmological Geography as Regards Trachoma. Chibret (Clermont Ferrand.) *Report to the French Ophthalmological Society, 1896.* This report embodies a continuation of the researches of Chibret which he began fully sixteen years ago and which were the subject of his communications to the two international congresses of Copenhagen (1884) and Berlin (1890). Hence his unanimous choice by the committee of the French Ophthalmological Society as chairman of a commission upon the broad subject of Ophthalmological Geography, the object of which is to establish among other things, the laws governing the distribution, etiology and receptivity of eye diseases. Seventeen collaborators were chosen by the Society from different countries as associates of Chibret in his labors, and to each he addressed a circular setting forth the information necessary for the elaboration of a report, and expressing his intention of limiting the question to the geographical distribution of trachoma and the causes governing this distribution. He chose trachoma as the first subject of inquiry because, as he states: "In this I have imitated the example of the bacteriologists; they, at the outset, confined all their efforts to the study of anthrax, making it 'the microbic disease-type', and it has been the source of fundamental ideas. * * * The immunity of the Algerian sheep to anthrax, which could not be forseen, has always seemed to me very suggestive as regards human pathology." He directed his collaborators to group their answers and observations under three principal heads: 1st, The germ or unknown microbe, whether they admit its virulence; the pathologic cell, whether they deny its contagiousness and therefore its virulence. 2nd, The soil (*terrain*): embracing race, occupation, alimentation and temperament. 3rd, The Meteorological conditions, including the influence of the atmospheric pressure, temperature, hygrometric condition and insolation, (exposure to direct sunlight. Rev.). Of the seventeen collaborators officially associated with Chibret only two, Dr. Foucher of Montreal, and Dr. Sulzer of Geneva, responded! Drs. Hirschberg (Berlin), Dianoux (Nancy), Bribosia (Namur), Samelsohn (Cologne), and Swan Burnett (Washington) were volunteers enrolled by the reporter, and all replied:

The limits of this review permit only of gleanings from the report, which is eminently creditable to the scientific enthusiasms and industry of its author.

1st. *Germ, Pathologic Cell, Contagion, Virulence.* Foucher (Montreal) agrees with Dianoux in considering the microbe of trachoma as closely related to the bacillus of Koch, and Burnett while he is not convinced of its contagiousness, believes with Dianoux that the infectious matter germinates according to the fertility of the conjunc-

tival soil, and that at first a simple conjunctivitis, it can lead to the development of trachoma in a predisposed eye. None of the reporters or their collaborators connect the trachomatous virus with that of blenorrhœa, though (as is well known) Fuchs does, while Chibret among other facts, cites the immunity of the Canadian Indians to trachoma, who nevertheless have none for blenorrhœa. All the observers distinguish follicular conjunctivitis from trachoma, the latter being the sole form resulting in conjunctival atrophy. Some deny anatomo-pathologic differences, but all agree in differentiating the two affections clinically, notwithstanding the former can lead to the latter. "Well attested facts of contagion are rare in America; the majority of the observers are virtually obliged to admit contagion without being able to furnish precise and demonstrative observations. ***Several observers after having noted the non-contagiousness of trachoma in families, mention with astonishment cases where the affection has remained monocular for many years. These cases, in my opinion come under the law of "*attenuation de passage.*" Chibret, Bribosia and Samelsohn regard vernal catarrh, like follicular catarrh, as "the clinical expression of the attenuation of trachoma," though it is difficult to reconcile this view with a case of vernal catarrh cited by Chibret which he cured by correcting a high degree of astigmatism, and which he nevertheless maintains is only evidence that sometimes vernal catarrh may arise from other causes than the attenuated trachoma virus!

2nd. *Soil* (*terrain*), *Race*, *Occupation*, *Alimentation*, *Temperament*, Chibret rehearses the well-known fact that in 1876 Swan Burnett first showed by statistics the rarity of trachoma among the negroes of North America, and hence the immunity of the black race. In 1890 Chibret himself established the immunity of the Celts of Broca. Although the facts advanced by Burnett were very inconsiderately contradicted in Chibret's opinion by van Milligan, *(Constantinople), who bases his denial upon the fact that negroes are sometimes attacked in America, and very often in Constantinople. * * * "the report of Burnett evidently demonstrates that not only in Washington where he observed, but in all parts of the United States, the black race enjoys an immunity relatively to the white race." This immunity, Chibret believes cannot be due either to the inferior social condition of the negroes nor to the identical meteorological conditions of the whites and blacks, hence it is certainly due to race. As explaining the disagreement between van Milligan and Burnett, Chibret points out that the negroes of America were imported from the West coast of Africa, while those of Constantinople came from the North-east of Africa, and are an

* Burnett in replying to van Milligan, (Ann. d'ocul., cxv. p. 114) remarks that statistical investigations on trachoma are under the disadvantage that different authors call different conditions trachoma. *Rev.*

impure race, mixed Semetic (*matinee de semite*), a very receptive race, while the American negroes are of a very pure race, or mixture of white races very slightly receptive. The immunity of the American negroes is not absolute, but relative.

Foucher on the other hand establishes an *absolute* immunity which can be due only to race, viz: that of the the Indians of Canada. Neither Foucher nor the six specialists consulted by him have ever observed a single case of trachoma among the Canadian Indians, although these are insufficiently nourished, idle, slovenly, etc., while syphilis, tuberculosis and eruptive affections decimate them. In Manitoba the Crees' and Sauteux live close to the Russian Mennonites in the same contempt of hygiene; yet while the latter are ravaged by trachoma and many of them blind from it, the Indians remain unaffected, though they are as slovenly as the other Indians, and contract syphilis and tuberculosis.

Although the Indians of the United States are subject to trachoma, Chibret finds in this fact only a corroboration of the doctrine of race immunity, since the Indians of Canada and Pennsylvania are a different race from those of the other Indians of North America, and he thinks that information regarding the Pennsylvania Indians would prove them to be immune, though Burnett has not yet furnished it.

Chibret concludes then, that there are three immunities of race: 1st, The absolute immunity of the Canadian Indians; and 2nd, the relative immunity of the North American Indians; and 3rd, the relative immunity of the race of Celts of Broca.

Of the eminently *receptive* races, the evidence of Santos Fernandez (Bavaria), Myashita (Tokio), van Milligan (Constantinople), and of the American observers, Andrews (New York), Eaton (Portland, Oregon), Rivers (Denver), Southard (San Francisco), establishes without doubt that the yellow race is by far the most receptive.

Occupation.— Chibret's reporters afford no support to the influence of occupation as regards the receptivity of trachoma.

Alimentation.— Neither do they furnish evidence that alimentation has any influence; mentioning only insufficience of nourishment.

Temperament.—The same as regards temperament.

Meteorological Conditions, Atmospheric Pressure, Temperature, Insolation.—According to the report of Sulzer (Geneva), the Swiss are exempt from trachoma which he attributes solely to altitude. Cold, humidity, absence of insolations are not sufficient to account for this immunity, since these conditions all exist in Ireland and the Baltic provinces. Yet they have their influence, since Rivers (Denver) finds trachoma common in the high but dry, hot, dusty altitude of Colorado;

hence Chibret concludes that altitude has but a feebly immune influence *per se*, but an active one when re-enforced by cold, humidity and absence of dust, as in Switzerland.

Insolation though having an irritating effect on the conjunctiva, only enhances receptivity in such regions as the Rocky Mountains where the air is excessively dry.

Of the seven members of the Society who took part in the discussion following the reading of the report, only one sided with the reporter. Some denied race immunity in spite of the evidence (the force of that which is here given, the reader can judge); others insisted that infection played the principal rŏle, and that race had little or no influence. The reading was long, and we think that could they before discussing it with us have read this most admirable report they would have found it difficult to refute, at least the evidence as to immunity of race.

At all events their hasty denials would seem to justify the sarcastic rejoinder of Chibret in closing the discussion. "The receptivity of the human race to new ideas is almost as feeble as that of negroes to trachoma. I have just had a proof of this; for my honorable contradictors have hardly understood the new ideas which I had the honor to present to them.

F. B. EATON.

REPORTS OF SOCIETIES

SECTION ON OPHTHALMOLOGY,

College of Physicians of Philadelphia.

Meeting of the Ophthalmic Section of the College of Physicians of Philadelphia, October 20, 1896.

Dr. William F. Norris, President, in the chair.

Dr. John T. Carpenter, Jr., showed a case of *Recovery from Unilateral Optic Neuritis, Left Eye.* The notes of the case were as follows:—

Anna R., æt. 15, was first seen May, 1895, when glasses were ordered for compound hypermetropic astigmatism O. D. — 2.00 = — 1.00c 60° V. = 6-VII½. O. S. — 1.25 = — 0.75c 75° 6-VI ? The ophthalmoscope showed at this time partial atrophic pallor of optic nerves from macular lesions, almost symmetrically placed and exposing glistening sclera.

The present attack began June, 1896, when after an attack of sore throat with fever, of a few days duration, she noticed a dense fog before left eye, which rapidly increased until seen, July 9, 1896. There was dull headache and ocular fatigue. O. D. V. 6-VII½ O. S. 6-XIX small print read with O. D. but large type D = 1.50 scarcely read with O. S. and rapidly fading. Absolute scotoma (central) was found. No peripheral contraction for form or color.

Ophthalmoscope showed typical picture of neuro-retinitis limited to lower half of disc and extending into lower nasal-retinal field. Arteries almost empty, veins engorged and tortuous. Pressure on ball caused no pulsation and entirely emptied the retinal vessels. Several small retinal hemorrhages near the disc with the degenerative changes in the edematous area completed the picture.

The right fundus oculi showed no alteration from the previous condition noted in 1895. There was absolutely no family history pointing to syphilis. She had never suffered from rheumatism nor has there been any menstrual disturbance. Under treatment by potassium iodide, vision is now three months O. S. 6 VI ?? D = 0.50 ctm., easily read and no scotoma exists, either for form or color.

The optic nerve, however, shows marked atrophic pallor. The arteries are still smaller than normal, and there is some vascular formation pushing forward from retina into the vitreous at the side of the neuro-retinal lesion. A drawing of the fundus at the time of the neuritis, together with a chart showing the central scotoma, was also shown with the case.

Discussion.—Dr. de Schweinitz described two cases of unilateral optic neuritis. The first occurred in a married woman of forty. The

visual disturbance, beginning with a blur in the center of the right field of vision, rapidly developed into a large scotoma, spreading out almost to the periphery of the visual field, so that within a short time acuity of vision was reduced to bare perception of light. Ophthalmoscopically, there was optic neuritis, the swelling being 3 D., and in the neighborhood of the papilla were a number of flame-shaped hemorrhages. This neuritis was attributed to rheumatism superinduced by wading in a brook when the patient was much overheated. Under the influence of free leeching, salicylate of sodium, and iodide of potassium, improvement rapidly began, and at the end of three months all ocular symptoms had disappeared. Eight years had elapsed since the occurrence of this neuritis without the reappearance of visual disturbances in either eye. Dr. de Schweinitz referred to his case as an exception to those described by Hirschberg, in which primary unilateral optic neuritis of one eye was followed sooner or later by an attack in the second eye.

The second case occurred in an unmarried woman, aged twenty-three, a type-setter by occupation, who presented on the right side a large central scotoma, extensive optic neuritis, and a star-shaped figure in the macula, somewhat resembling the appearance of albuminuric retinitis. Just prior to the attack of blindness, she had suffered from a severe right facial neuralgia attributed to a defective tooth. There was no history of general disease, and physical examination failed to reveal constitutional taint. Syphilis was not demonstrated, but the patient improved rapidly under ascending doses of iodide of potassium. At the end of three months vision was $\frac{6}{20}$, and the neuritis had largely disappeared. Since that date the patient had not been seen, and the subsequent history could not be given. The possibility that the affection was due to a metallic poison was referred to.

Dr. de Schweinitz also described a case of asymmetrical neuritis due to chlorosis of two years standing, with a complete recovery under the influence of iron. The importance of recognizing anemia as a factor in the development of neuritis was referred to; also the danger of delaying the administration of iron, lest an anemic neuritis should be succeeded by a post-papillitic atrophy. As is usual in cases of optic neuritis, the refraction in all of these eyes was hypermetropic.

Dr. G. Oram Ring.—You perhaps recollect two cases I reported at the May meeting of the Section,—one in a woman aged thirty. I at that time referred to the literature and to the work Dr. de Schweinitz had done up to the time of his last publication, The swelling in one case was 5 dioptries; in the other 2½; no macular changes; no retinal

changes of any sort. They improved very rapidly under mercurial inunctions, vision in each case returning to normal.

Dr. S. D. Risley mentioned two cases, both occurring in his private practice. The first was in a man aged sixty, without assignable cause. The swelling resembled the choking of the disc from cerebellar tumor. The veins were enormously dilated, the retina infiltrated, large hemorrhages in the macular region, and the most prominent part of the nerve + 6 D. In the second case, a young woman aged seventeen, the optic neuritis was apparently due to malarial infection, since the corpuscles of Lavernen were found in great abundance in the blood. She recovered with normal central vision, but one quadrant of the field remained blind. A third case with edema and infiltration of the retina is under treatment.

Dr. William Thompson reported a case in a very old man whom he had treated for choroiditis disseminata. He ascribed the cause to a chronic and neglected ozena. Under proper nasal treatment and mercurial inunction, vision that had been greatly reduced was restored to its previous acuity.

Dr. B. A. Randall recalled a similar case due to pyemia of the posterior ethmoidal cells.

Dr. Charles A. Oliver exhibited a case of *Probable Intraocular Growth in the First Stage of Development* in a fifty-six year old man, who, without history of traumatism or any dyscrasia, had complained of progressive and painful loss of sight in the left eye for the past eighteen months, this failure of vision being especially marked in the upper field. The eye was as quiet as its healthy fellow, the only noticeable difference upon close inspection being that its pupil was slightly larger and the iris a trifle sluggish.

Ophthalmoscopically there could be seen a localized, absolutely fixed detachment of the retina which rose abruptly and almost vertically on the temporal side, from the lower portion of the equator of the globe and gradually shelved outwardly and downwardly from a somewhat flattened apex to a series of successive steps on the nasal side.

Eccentric vision was reduced to $\frac{5}{6}$, and the field of vision showed a defect which corresponded with the supposed intraocular mass.

Although the intraocular condition remains apparently nearly the same at present as it did when the patient was first seen, yet, in spite of alternatives, the remaining field of vision has been slightly encroached upon from above. Intraocular tension has never risen, and there never has been any inflammatory reaction. Operation will be deferred until the time that the diagnosis becomes more certain.

Dr. Randall showed a card specimen of an intraocular growth that presented the unusual feature of absence of retinal detachment.

Dr. Edward Jackson called attention to *Two Practical Points about the Corneal Reflex*. The small bright image of the lamp-flame reflected from the cornea, when the ophthalmoscope is used, and formed by rays reflected from about the sight-hole of the mirror to the eye and from the cornea back through the sight-hole, is always seen in the direction of the center of curvature of the cornea. Hence, as the surgeon's eye is moved, or the patient's eye is rotated, the corneal reflex appears to move across the pupil exactly as would an opacity situated at the center of curvature of the cornea, that is, at a point usually about one-half millimeter behind the posterior pole of the lens. The comparison of the relative rate of apparent movement of opacities, situated in this portion of the eye, with the movement of the corneal reflex across the pupil, determines very accurately the depth of such opacities behind the summit of the cornea; since the curvature of the cornea, the length of its radius of curvature, is readily measured with the ophthalmometer.

The second point was, that, in the usual ophthalmoscopic examination by the direct method, the corneal reflex causes a circle of diffusion on the surgeon's retina which interferes with the success of the examination, if the pupil is small. Since the size of this circle of diffusion depends directly on the size of the sight-hole in the mirror, by making the sight-hole small the examination is facilitated. A sight-hole two millimeters or less in diameter was recommended.

Discussion.—Dr. Thomson had used for some years, for the purpose of securing a defined image of legions of the fundus, instead of a round hole, a slit in the mirror 9 or 10 mm. long and 1mm. wide, that he had found possessed decided advantages. Recently, however, he had substituted for it the Jackson mirror and testified to its great practical value.

Dr. B. Alex. Randall read a paper entitled *Rhinitis as a Factor in Phlyctenular Ophthalmia, with its Therapeutic Consequences*. Among the many causative factors in phlyctenular conjunctivitis and keratitis, inflammatory affections of the nose must not be ignored; for they can frequently be demonstrated to be of prime importance. In the great majority of cases, hyperemia and oversecretion of the nasal mucous membrane will be found more constant than eczema or any other of the more incidental accompaniments; and treatment limited to this alone will often bring a cure quicker than could be gained by any local measures without it. Elaborate apparatus and skill are uncalled for. Mere illumination of the nares will usually show the condition, and simple sprays of alkaline and of oily solutions can do much to re-

lieve it. Calomel insufflation can be more valuable than in the conjunctiva, and, instead of the iodine being a bar to its use, its combination with mopping the pharyngeal vault with iodine can be especially efficacious. The ophthalmologist must not neglect this field, which used to be his; and, unless he has some one at hand, better prepared than himself, to give it due care, should stand ready to study and treat in his patients these simpler nasal affections.

Discussion.—Dr. Ring has, for nearly two years, referred nearly all cases of phlyctenular conjunctivitis treated in his clinic at the Episcopal Hospital, to the Throat and Nose Department for nasal treatment.

Dr. Risley has been well satisfied with the results of rhinological treatment of obstinate cases.

Dr. de Schweinitz considers that in all the cases attention should be drawn to the condition of the nares. In his public clinics, when immediate nasal treatment was impracticable, he has sterilized the nose as well as the eye by the simple remedies that he kept on hand for the purpose, and the results had been the happiest.

Dr. Risley presented a brief paper on *Defective Coquilles.*

He stated that for many years he had denied these to his patients, ordering instead plane smoked glasses. His attention had recently been called to the importance of the defects of these coquille smoked glasses by a patient with hypermetropic astigmatism, whose asthenopia had been greatly aggravated by a pair of smoked coquilles, which proved to be spherocylinders, combined with a prism of one degree up and out.

He then presented the results of the examination of a dozen pairs taken from the original package direct from the manufacturers.

The following are the results reported.

(1) R. — .25^{s} ⌒ Pr. 1 B. in.
L. — .37^{s} ⌒ Pr. 1 B. in.
(2) R. — .75^{s} ⌒ — .50^{c} axis 120 ⌒ Pr. 1 B. up.
L. — .50^{s} ⌒ — .37^{c} axis 135° ⌒ Pr. 75 B. up.
(3) R. — .25 ⌒ — .25^{c} axis 40.
L. — 37^{c} — axis 110°.
(4) R. + .25 ⌒ + .25^{c} axis 70 ⌒ 1 Pr. B. in.
L. + .25^{s} ⌒ Pr. 1° B. in.
(5) R. — .25 ⌒ — .25^{c} 90° ⌒ Pr. 1½ B. out 1° Pr. B. up.
L. — .50^{c} axis 180° 1 Pr. B. up.
(6) R. — .37^{s} ⌒ Pr. 1° B. out ⌒ Pr. ½ B. down.
L. — .25^{s} ⌒ — .37^{c} axis .25 ⌒ Pr. 1. B 135°.

(7) R. — .25^{s} ⌣ Pr. ½° B. out.
L. — .50^{c} axis .90 ⌣ Pr. 1 B. 115.
(8) R. — .25 ⌣ — .25^{c} axis .90. Badly scarred line through center, axis 75.
L. — .25^{s} ⌣ — .25^{c} axis 75 ⌣ Pr. 1 B. out.
(9) R. — .25^{c} axis .30. Badly lined surface.
L. — .50^{c} axis .165 ⌣ Pr. ½° B. out.
(10) R. — .37^{s} ⌣ Pr. 75 B. out.
L. — .37^{s} Pr. 75 B. in.
(11) R. — .37^{s}
L. — .25^{s}
(12) R. — .37^{s} ⌣ Pr. 75 B. in.
L. — .25^{s} ⌣ Pr. 1 B. up.

He contended that such defects must of necessity be more or less injurious to all weak and inflamed eyes, and that therefore the coquille glasses as found in the shops should be abandoned in practice, and be substituted by the plane smoked glasses. Even with these it was necessary to exercise care in ordering, to secure parallel surfaces, and thus avoid prismatic effects.

Discussion.—Dr. William F. Norris has been so often annoyed by the unpleasant effects of the irregular refraction of coquilles that he has discarded them and resorts to plane smoked glasses.

Dr. Ring has measured probably fifty coquilles and has found that without exception they are low minus cylinders.

HOWARD F. HANSELL,
Clerk of Section.

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OPHTHALMIC RECORD

A Monthly Review of the Progress of Ophthalmology.

VOL. VI. CHICAGO JANUARY 1897 NO. I. NEW SERIES.

EDITORIALS.

A FEW WORDS FROM THE OLD EDITOR.

"The RECORD has demonstrated its right to live"; "I get more practical information from the RECORD than from any other current source"; "one single hint in one single issue of the RECORD has been worth more to me than the cost of several volumes"; "I have followed the teaching of the RECORD with interest and can report many excellent results"; these are a few of the kind expressions that have been received from time to time, since the RECORD was founded more than five years ago. It was started in the interest of Ophthalmology and from the beginning of Vol. 1 to the end of Vol. 5 its only aim was the advancement of the science and art of Ophthalmology. The founder and former editor having been admonished a long time by friends that his three-fold work, practice, lecturing and editing, was too much for him; and his own judgment convincing him that his personal well-being and the interest of his family would be enhanced by lessening his labors, he decided soon after the end of Vol. 5 to transfer to another the work of editing and publishing the RECORD. He determined first that it would be to the best interest of the RECORD to allow its removal to a larger city, and chose Chicago as the place of all places for its permanent home. He did not know then on whose shoulders would fall the editorial mantel, nor in whose hands the matter of publication

would rest. He had faith that some strong mind would undertake the work of continuing the RECORD, and that strong hands would carry on the undertaking. In this he was not disappointed. The RECORD and its franchise have been transferred to Dr. Casey A. Wood who has already demonstrated his ability as an editor. The founder and former editor was rejoiced when he first learned that such a transfer was possible; and his joy knew no bounds when placing his signature to the paper that sealed the future of the RECORD for weal. If any should sorrow because of the retirement of the former editor, that sorrow will be more than counteracted by the gladness that, henceforth, Casey A. Wood is to be at the helm.

With his characteristic energy he has gone to his new work. This issue shows what he has done and gives promise of what he will do.

As will be seen the former editor remains editorially connected with the RECORD. He will be permitted to express his views on subjects he may discuss, in the same free and impartial way as has been his custom. The list of co-workers, as published, shows the diversity of talent that will be employed, all for the advancement of Ophthalmology.

The RECORD belongs to Ophthalmology; and every Ophthalmologist should enhance its financial prosperity by becoming a subscriber, and increase its literary success by contributing to its pages.

TO OUR READERS.

Although the members of the new RECORD staff recognize the difficulties that must always attend the editing of a journal of the size and character comtemplated by them, they also believe they will have the support of the profession so long as that support is deserved.

The OPHTHALMIC RECORD is not and never will be published in the interest of a particular geographical section, of a professional clique or of any one aspect of ophthalmology. It hopes to have readers in and contributions from all parts of the world of science. Every reputable contributor, having anything worth publishing, will always be welcome to, and is hereby invited to use, its columns.

THE OPHTHALMIC RECORD.

TO THE MEMBERS OF THE MEDICAL PROFESSION.

Doubtless the readers of the RECORD have seen a copy of the communication from Dr. Gould (printed elsewhere in this issue of the Record) and I am sure every one of us is in accord with the contentions advanced by the writer and will feel, on reading his letter, an instinctive sympathy with him in the position he has taken. We know nothing of Messrs. Wm. Wood & Co's part in the controversy but their action certainly calls for an early explanation. That a contribution to the periodical literature of our art is the common property of the profession and should be freely accesible to every reputable disseminator of it, be he lecturer, writer, translator or abstractor is simply an axiom in medicine. I can hardly believe that Messrs. Wm. Wood & Co. will persist in this attitude towards a worthy publication like the *Year Book*: should they do so such action will not redound to their credit or serve to advance their interests among those who in the past have been its chief support.

C. A. W.

MISCELLANEOUS.

The next meeting of the Western Ophthalmological, Otological, Laryngological and Rhinological Association will take place in St. Louis, Mo., on the second Thursday and Friday of April, 1897. Those intending to read papers should send their subject to Dr. Hal Foster, Secretary, at once in order that the programs may be mailed February 1st, 1897.

The February number of the OPHTHALMIC RECORD will contain (among others) an original paper by Dr. Edward Jackson, on The location of Opacities near the Posterior Pole of the Lens by means of the Corneal Reflex; one by Dr. Veasey, on Binasal Hemianopsia; one by Dr. Charles W. Kollock, on Epidemic Hemeralopia as seen on the coast country of South Carolina. There will also appear four reviews of the most recent contributions to Ophthalmology published here and abroad, book notices, editorials by prominent Ophthalmologists, society reports and miscellaneous items of interest.

The RECORD particularly desires short, practical papers on any subject connected with Ophthalmology. These will be published at as early a date as possible. It is understood that, unless otherwise arranged, original articles when accepted are contributed to the RECORD exclusively. Illustrative cuts will be made at the expense of the journal and proofs for correction will be sent to authors when desired. Reprints with covers are furnished at cost. One hundred of these will be presented to authors *gratis* when a request for them is written on the original manuscript. The RECORD will be issued monthly and each number will contain about 54 pages of reading matter.

Address all communications relating to the Editorial department, to

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